

NOTICE

THE ENCLOSED PACKET CONTAINS INFORMATION WHICH MUST BE ADDED TO YOUR HO-1288 DOLPHIN SERVICE MANUAL. IT INCLUDES TWO SECTIONS.

THE 9600 SERIES - This information should be inserted in your Dolphin Manual according to page and figure numbers, doing this, your Dolphin Manual will now cover the 9100 thru 9600 Series Organ.

THE APPENDIX - This includes Revised and Updated Information on the 9200 Series, Serial #340399 and Above and the latest information on the 9400 and 9500 Series. This should be inserted at the rear of your Dolphin Service Manual.

Also in this section, you will find Pages 4-15 and 4-16, 4-17 and 4-18. These two pages now in your Manual are in error, remove and insert enclosed pages.

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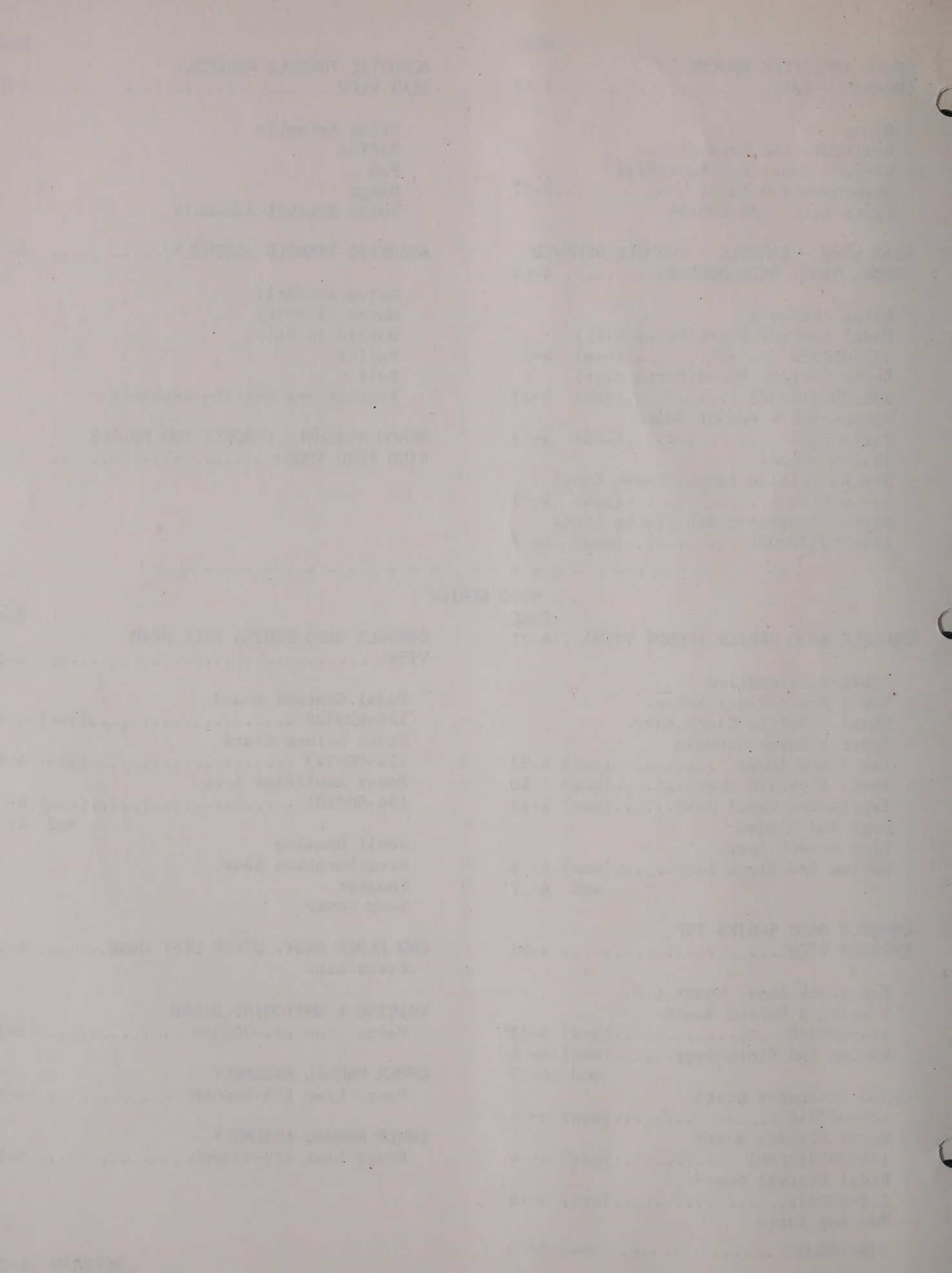
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TEST AND ADJUSTMENT PROCEDURES

DOLPHIN - 9600 SERIES

NOTE: During Test Procedures The Following Must Be Maintained Unless Otherwise Stated:

- a. Expression Pedal at Maximum
- b. All Tabs, Switches In Off Position

2-36

STEP TEST AND TEST POINT	DEPRESS TAB	PLAY KEYS	ADJUST	OSCILLOSCOPE OR OTHER INDICATION	FIGURE & NOTE
U/M LEVEL ADJUSTMENT 1(a) 12' Main Speaker	(a) U/M 8' Tibia (b) Operate Swell From Min. to Max.	U/M Key (a,b) 20	(124-386) Main Level Adj. (a) R38	(a) 1.4v RMS (b) Note Gradual Increase In Volume	
U/M LEVELS 2(a) 12' Main Speaker	Depress Individually (a) 16' Tibia (b) 16' Cello (c) 8' Tibia (d) 8' Violin (e) 8' Horn	U/M Key (a-e) 20		(a) 1.5-2.6v RMS (b) .49-.87v RMS (c) 1.4v RMS (d) .45-.80v RMS (e) .38-.67v RMS	
L/M LEVELS 3(a) 12' Main Speaker	Depress Individually (a) 8' Dia-pason (b) 8' Flute (c) 8' String	L/M Key (a-c) 20		(a) .75-1.33v RMS (b) .60-1.07v RMS (c) .32-.57v RMS	
PEDAL VOICE 4(a) 12' Main Speaker (b) See step 18	(a) No Tabs (b) Accent	124-386 R-41 Pedal Lev.		(a) 2.5v RMS (b) 3.7v-5.3 RMS	
REVERB 5(a) J919-2	(a) 8' Tibia Reverb I & II (b) Reverb II Only Reverb I Only	U/M Keys (a) 20 (b) 8,12,15	(124-166) Reverb Level Adj. (a) R20	(a) 30 mv (b) Note Three Decreasing Reverb Levels	

TEST AND ADJUSTMENT PROCEDURES

DOLPHIN - 9600 SERIES

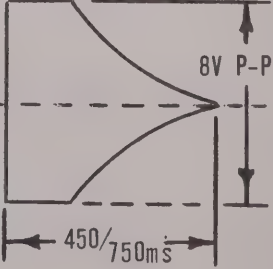
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STEP TEST AND TEST POINT	DEPRESS TAB	PLAY KEYS	ADJUST	OSCILLOSCOPE OR OTHER INDICATION	FIGURE & NOTE
VIBRATO ADJUST (IF NECESSARY) 14(a) 124-318 Collector of Q5	(a,b) Vibrato On & Normal (c) Vibrato Normal (d) Vibrato Small	U/M Key (c,d) 8	(124-318) (a) R10 (b) R20	(a) 147 m Sec. (b) 6.0v P-P (c) Note Vibrato Effect (d) Note Effect Is Less Pronounced	
TUNING 15(a) 12' Main Speaker	(a) 8' Tibia	U/M Key (a) 44	(a) (124-318) Coil	(a) 2091-2095 HZ	
HUM & NOISE 16(a) 12' Main Speaker	(a) All Tabs Off (b) All U/M, L/M Tabs & Reverbs I & II			(a) 25mv (b) 60mv	
RHYTHM UNIT 17(a) 12' Main Speaker	(a,b) 1. Rhythm Rate at Min. 2. Rhythm Volume at Max. 3. Continuous 4. Waltz 5. Silent/Sound 6. Brilliance (c,d) Turn Off Waltz Pattern (e) Depress Rhythm Voices One at a Time (f) Autochord Ballad 16' Diapason	(f) L/M 8,13, 15	(a) (124-194) Main Level Adj. (b) (124-194) Snare Adj. (c) (124-194) Brush Adj. (d) (124-194) Cymbal Adj.	(a) Bass Drum 15v P-P (b) Snare Drum 15v P-P NOTE: Use Second Snare Drum Beat After Bass Drum (c) .9 RMS (d) .7 RMS (e) Experience Will Indicate Proper Beats (f) Note that 8 & 15 Sound Alternately	(a,b) For Adjustment at Bass & Snare Drums Connect a .47 ufd Cap. From P-27-6 To Ground (c) For Adjustment of Brush, Apply -6v DC to P-27-1 (d) For Adjustment of Cymbal, Apply -6v DC to P-27-2 (e) Note Pattern & Tempo Light Start On Down Beat (f) Note Pedals Are Inoperative

TEST AND ADJUSTMENT PROCEDURES

DOLPHIN - 9600 SERIES

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STEP TEST AND TEST POINT	DEPRESS TAB	PLAY KEYS	ADJUST	OSCILLOSCOPE OR OTHER INDICATION	FIGURE & NOTE
17(a) Continued	(g,h) Rhythm Volume Min. Rhythm Rate Max. (i) 8' Horn Rhythm Volume Max. (j) Turn Off Silent/ Sound (k) Turn On Silent/ Sound Touch Re- set Rock Autochord Off (l) Synchro Start (m) Silent/ Sound Con- tinuous Waltz Autochord Operate Rhythm Rate From Min. to Max.	(g) Run L/M 1-27 (h) L/M 1 & 2 2 & 3 3 & 4 Etc. Thru 26 & 27 (i) L/M 8,12, 15 (j) L/M 8,12, 15 (k) L/M 8 & Pedal 13 One at a Time (l) L/M 8 & Pedal 13 One at a Time		(g) Note Keys 8 to 20 are Pedals 1-13; 1-7 are Same as 13-39; 21- 27 are Same as 9-15 Note Proper Seq- uence (h) Note Low & High Keys Sound Altern- ately Clear and Undis- torted. (i) Note Chord Sounds Once After Each Bass Note (j) Note L/M Plays Normally With- out Bass Notes Present (k) Note Rhythm Plays Only When Key or Pedal Is De- pressed (l) Note Rhythm Plays and Con- tinues After Key or Pedal Is Released (m) Note Smooth Operation & Tempo Range of Key & Bass Note	(1) Reset Silent/ Sound to Test L/M & Pedal Separately
PEDAL SUSTAIN 18 (a) 12' Main Speaker	(a) Pedal Sustain	Run Pedals		(a) 5.25-9.34 PP With Pedal 13, NOTE: That all 13 Pedals Sus- tain normally.	

TION III IS AND TEXT

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OF ILLUSTRATIONS

9600 SERIES

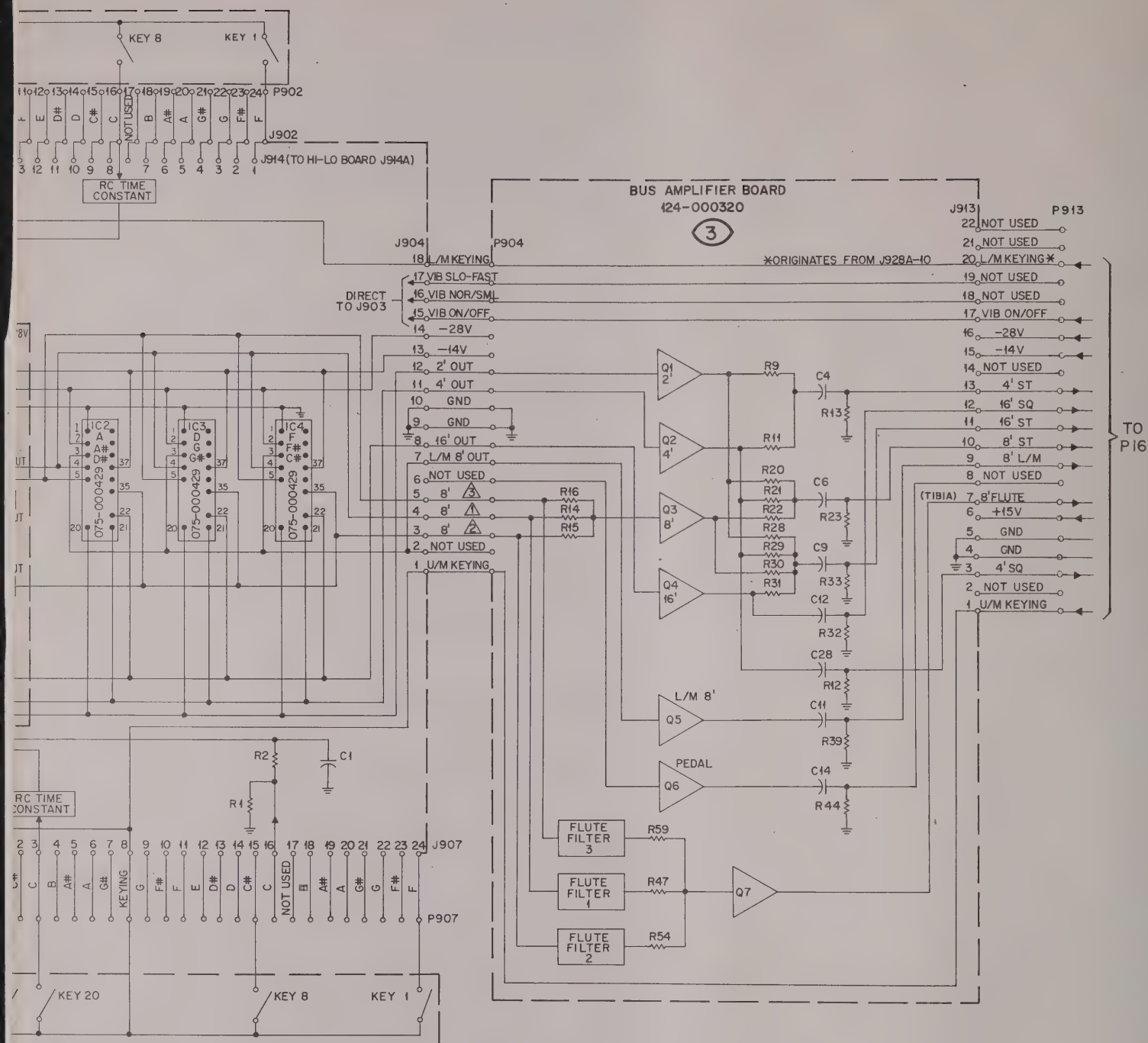
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SECTION III
DIAGRAMS AND TEXT

3-1. GENERAL.— This section contains schematic diagrams and text to illustrate and provide information necessary to proper organ servicing.

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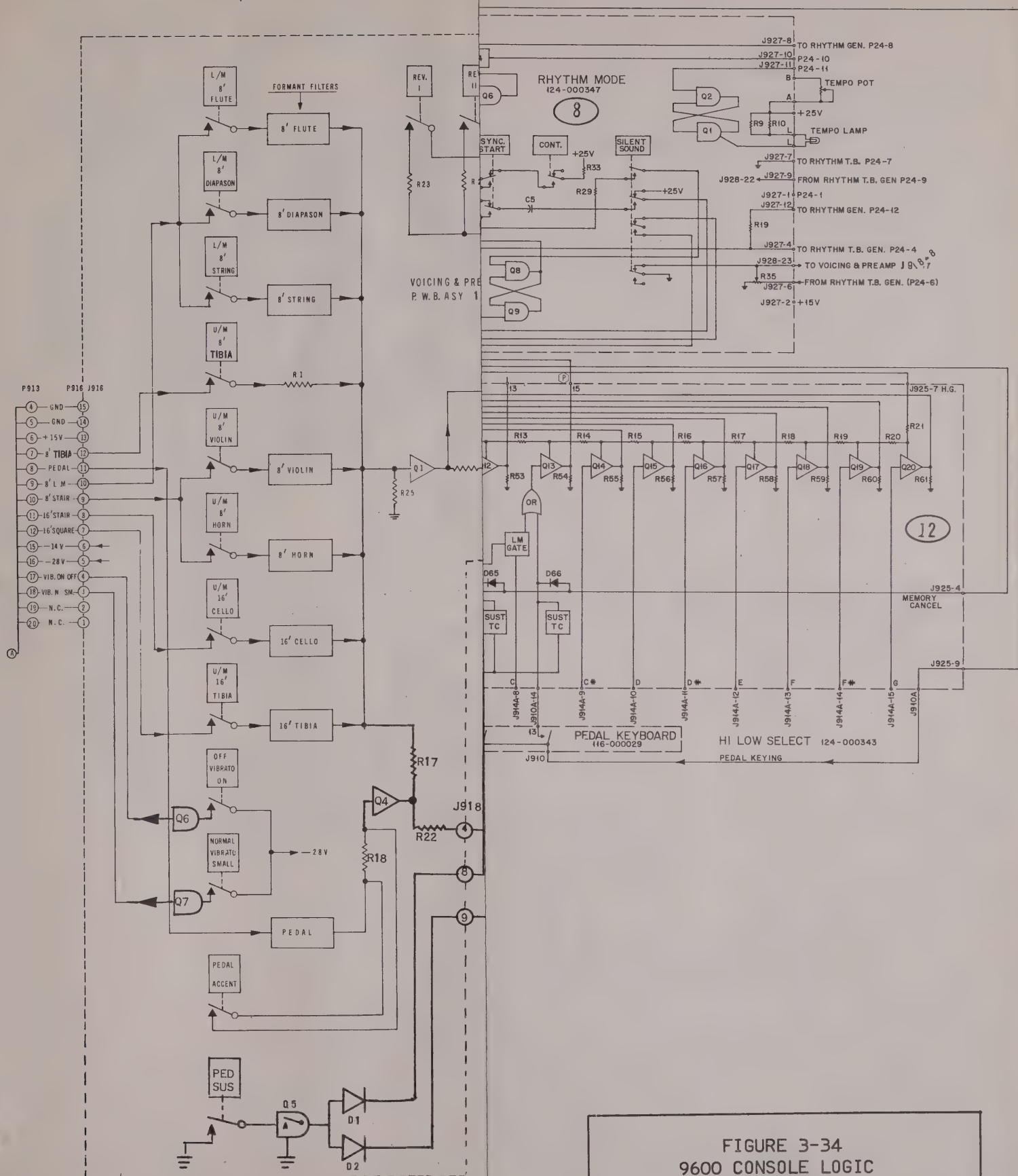


FIGURE 3-34
9600 CONSOLE LOGIC
DIAGRAM
(SHEET 2 OF 3)

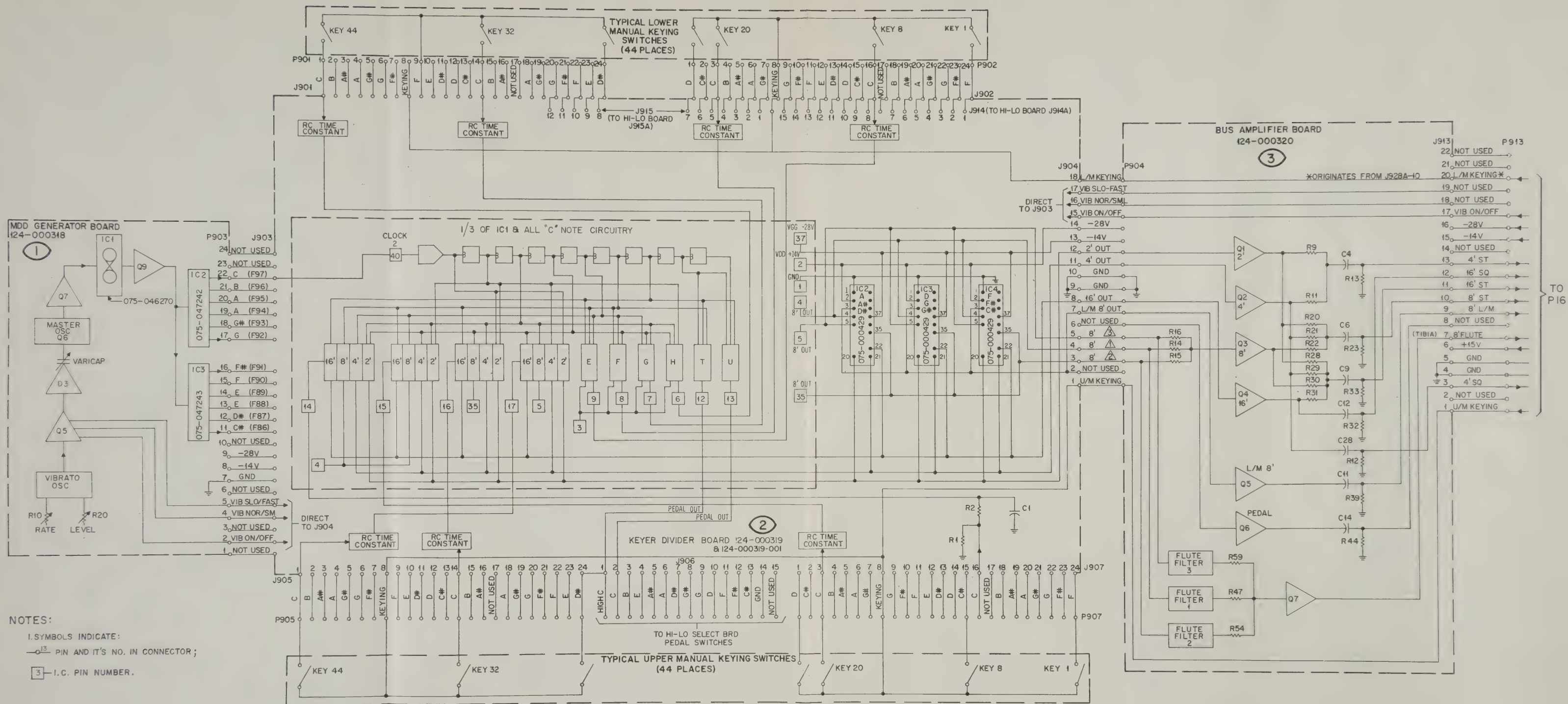
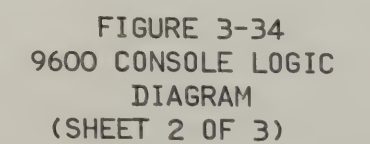
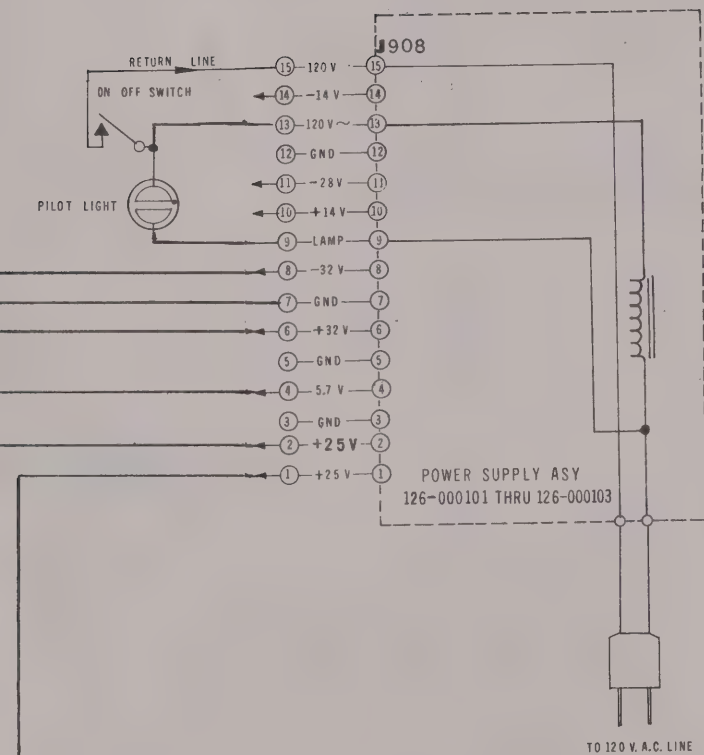
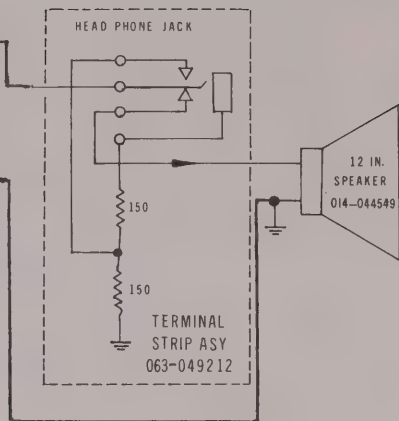


FIGURE 3-33
9600 CONSOLE LOGIC
DIAGRAM
(SHEET 1 OF 3)





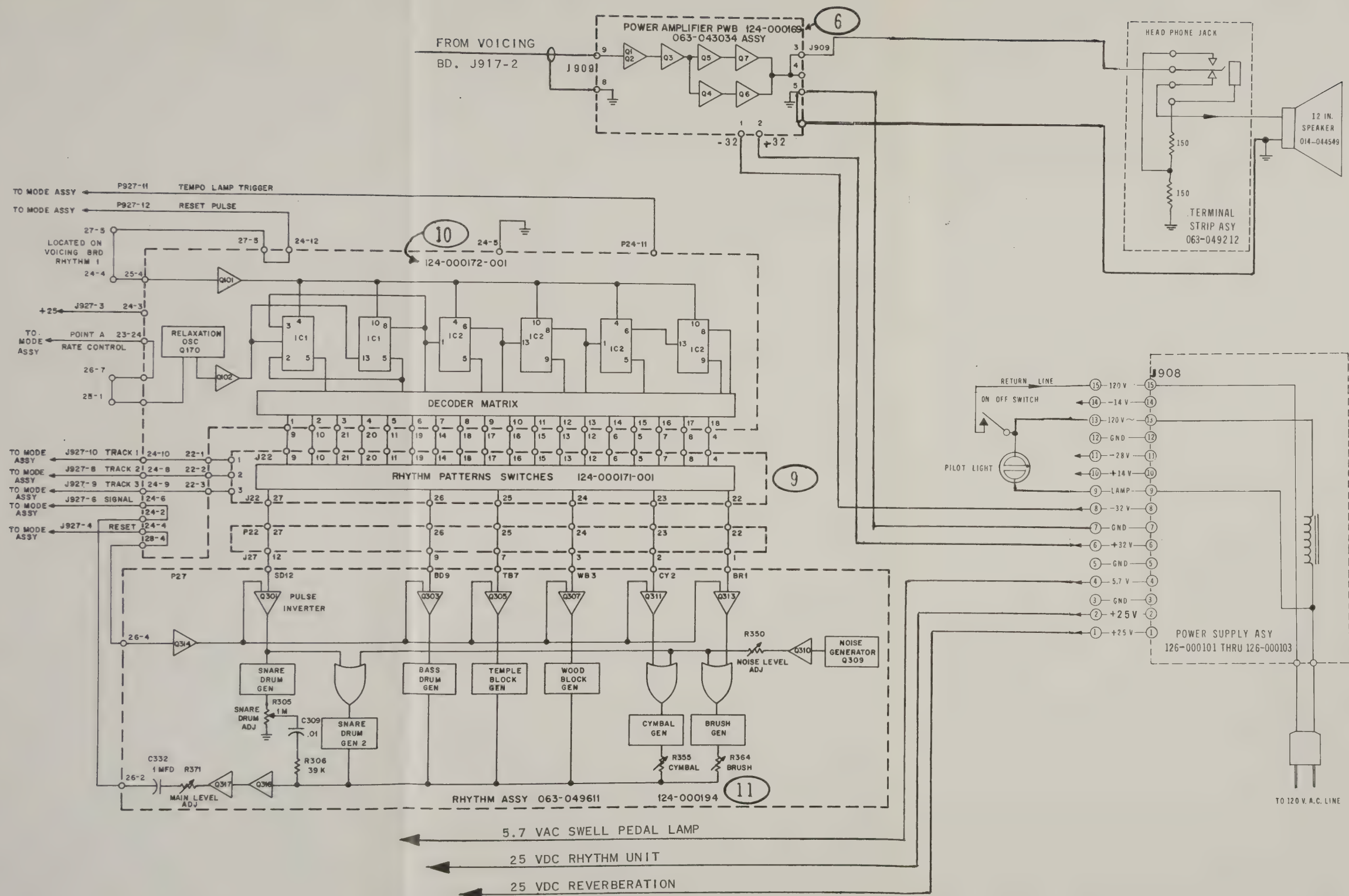


FIGURE 3-35
9600 CONSOLE LOGIC
DIAGRAM
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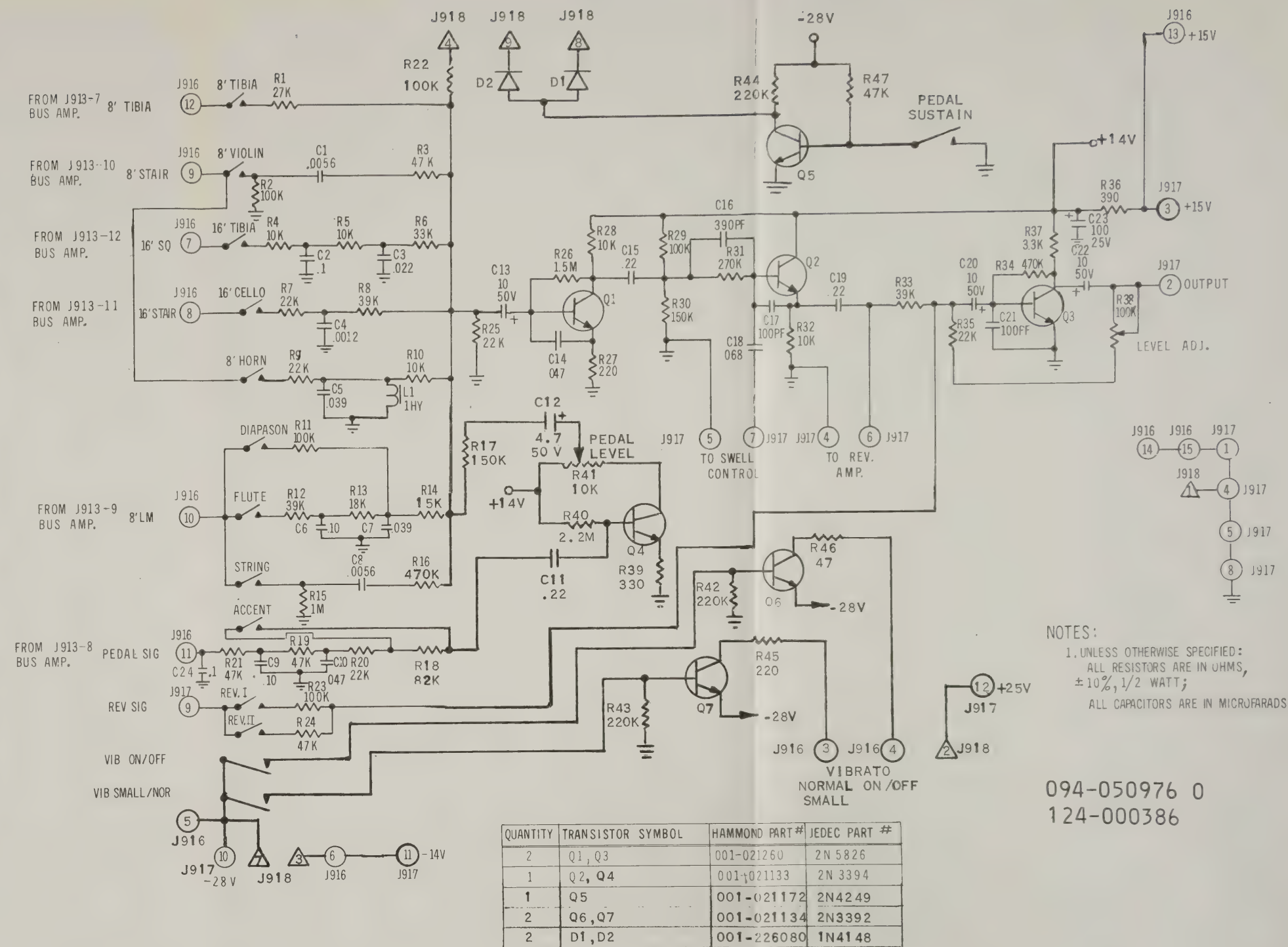
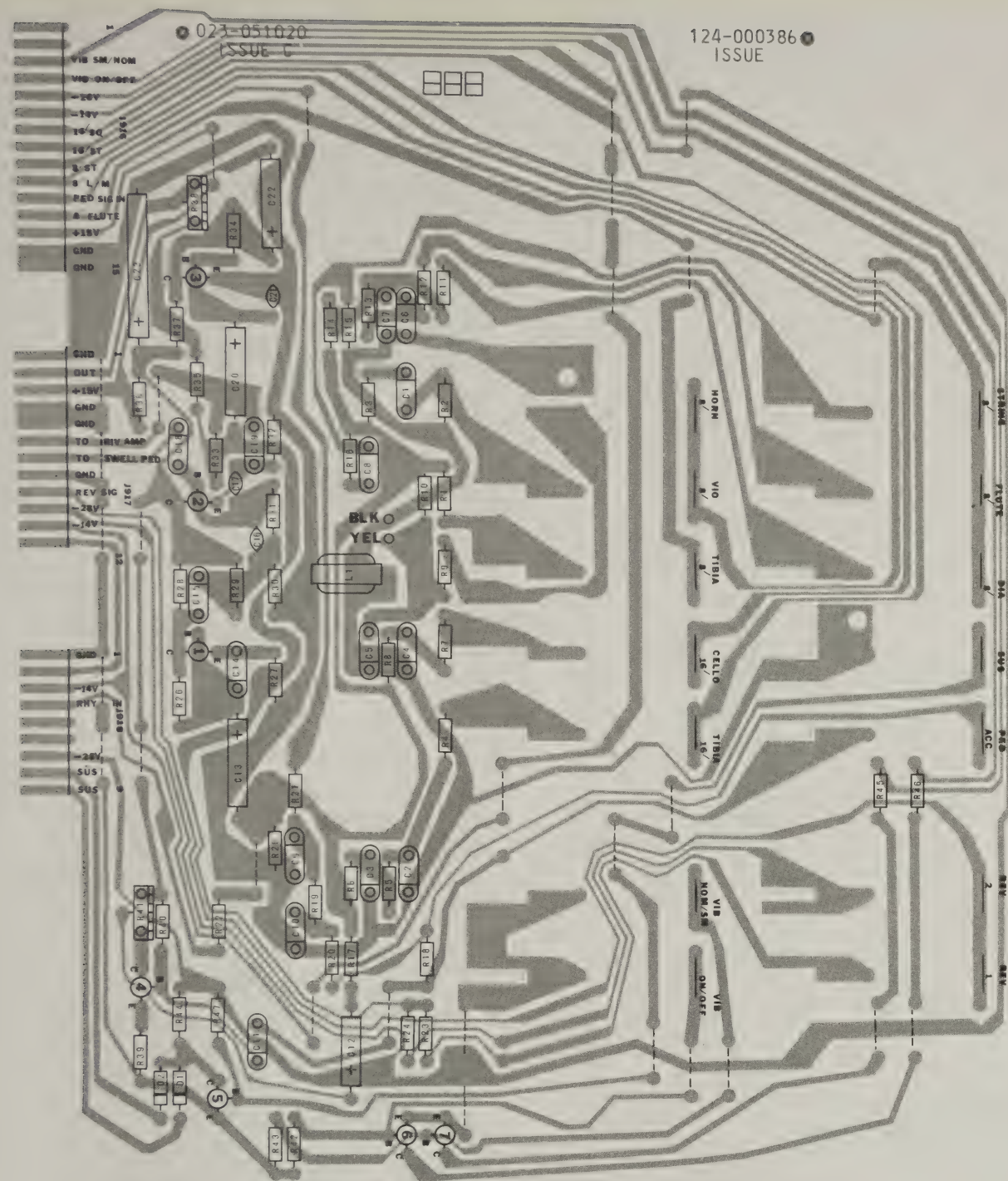
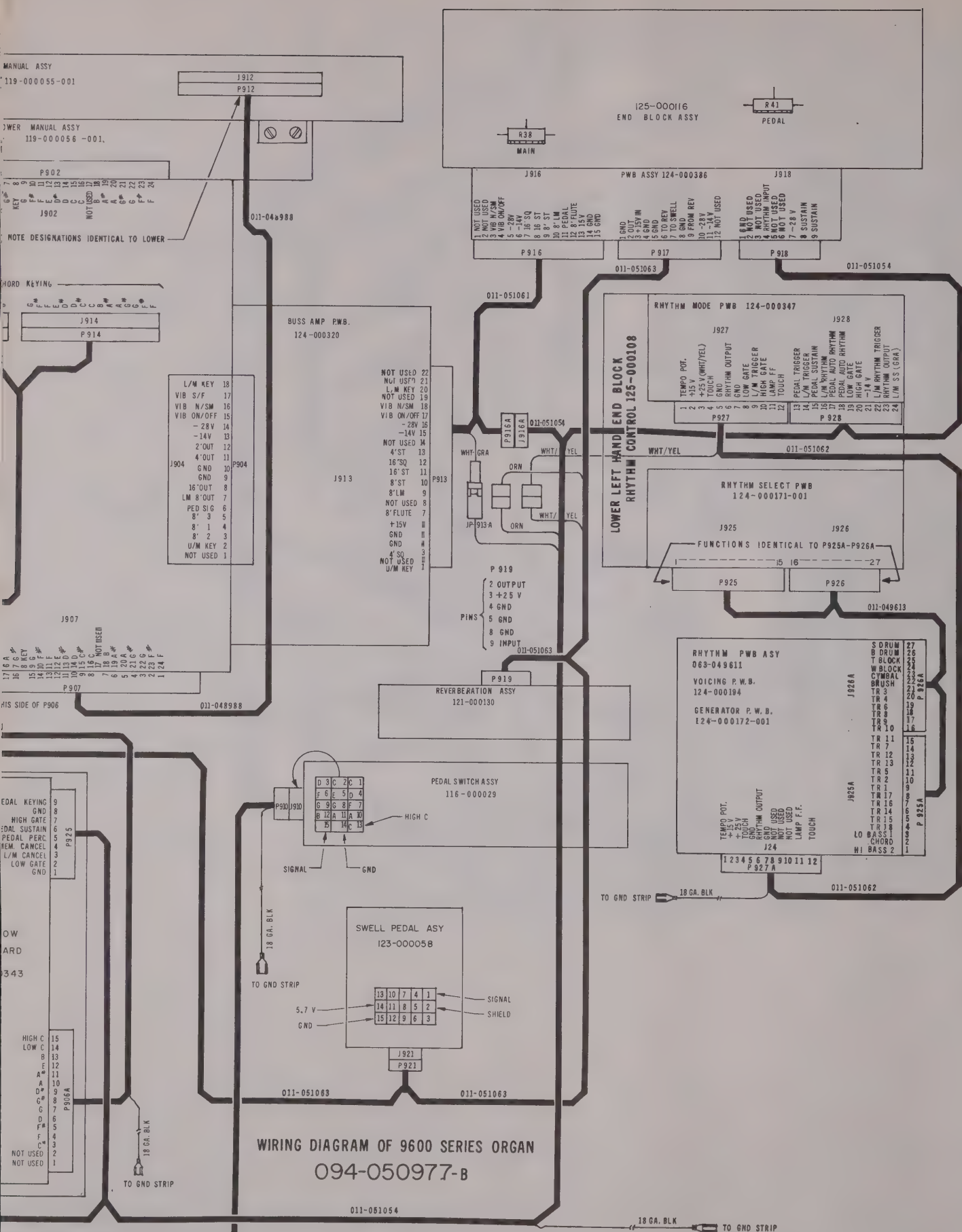
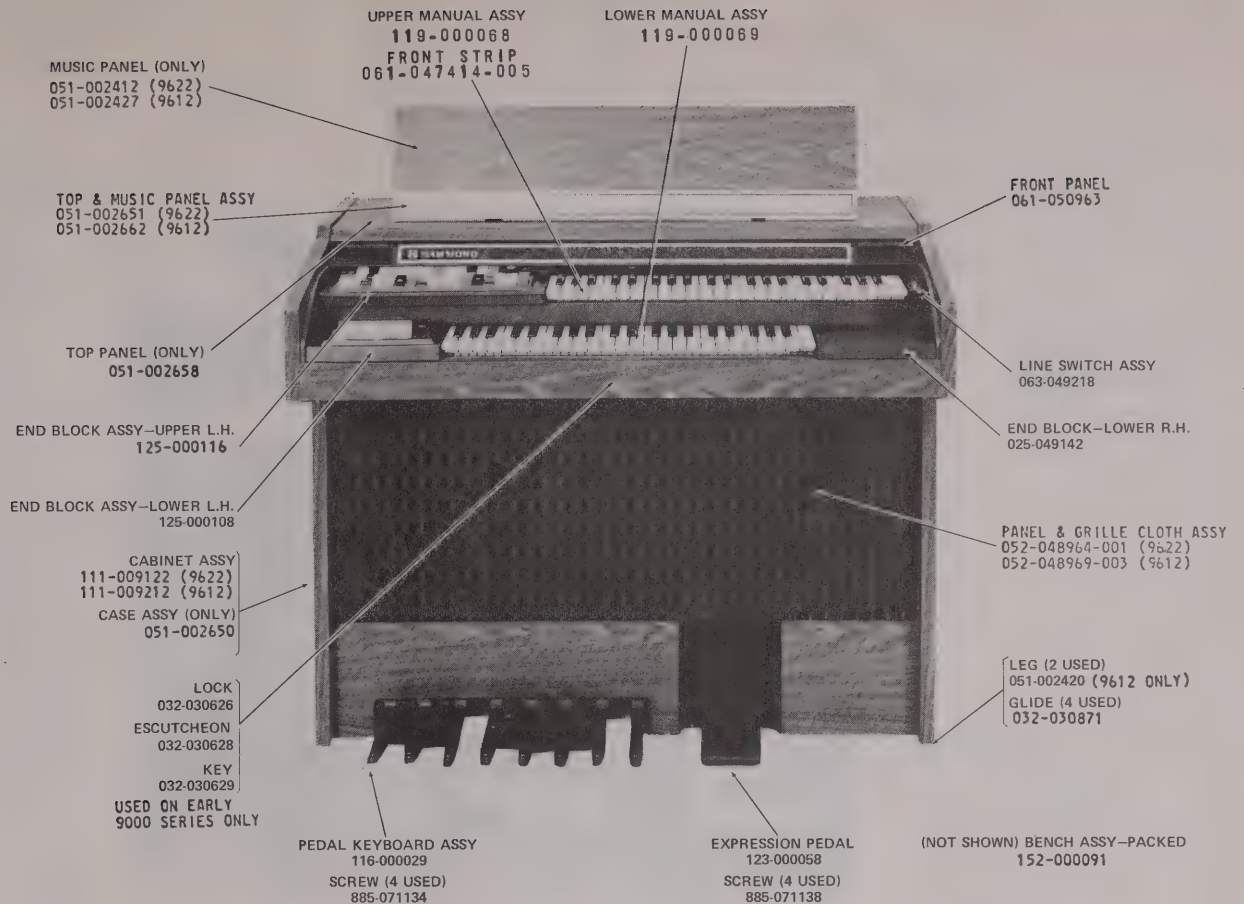
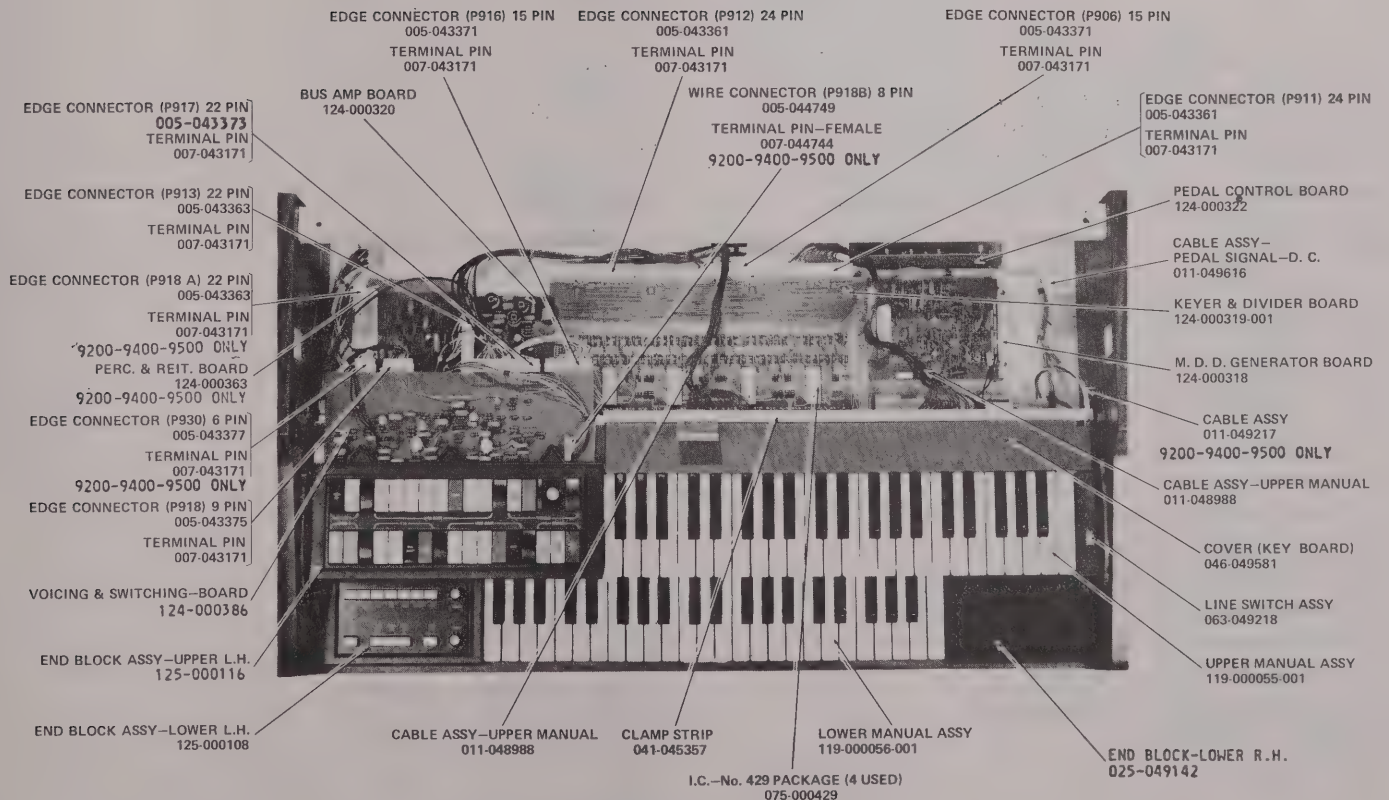


FIGURE 3-36
VOICING & SWITCHING
BOARD—SCHEMATIC AND
LAYOUT
(124-000386)

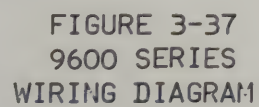


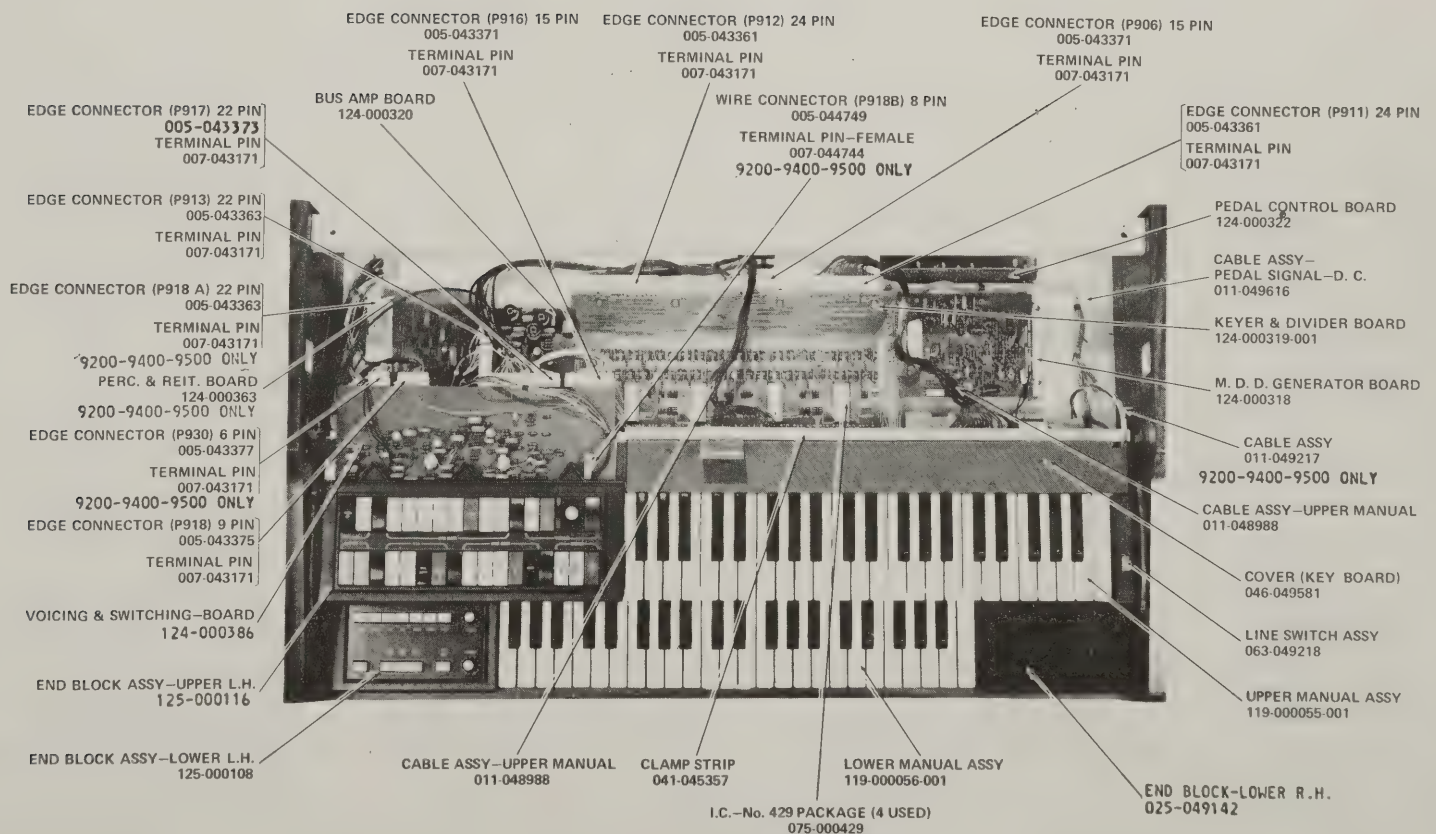
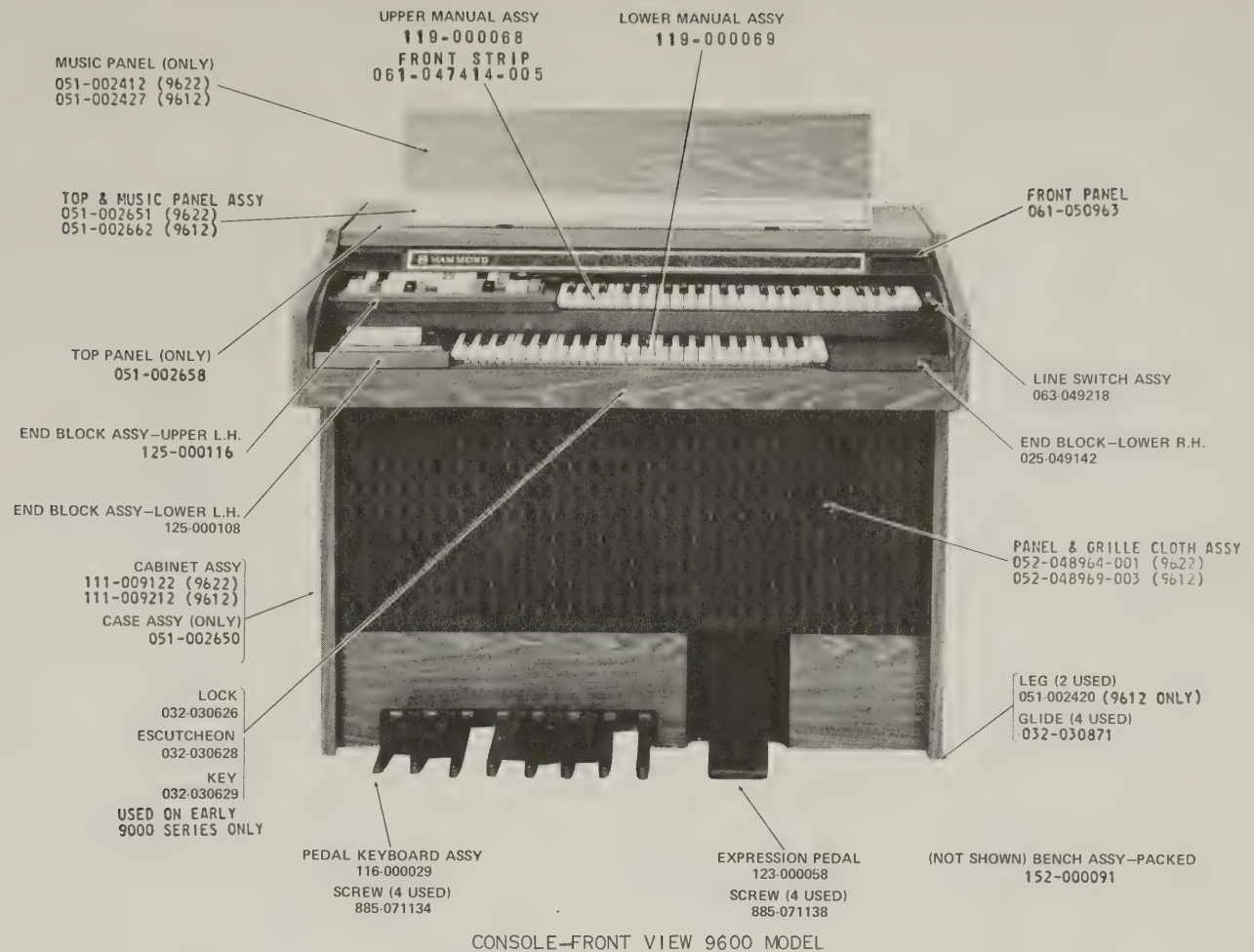


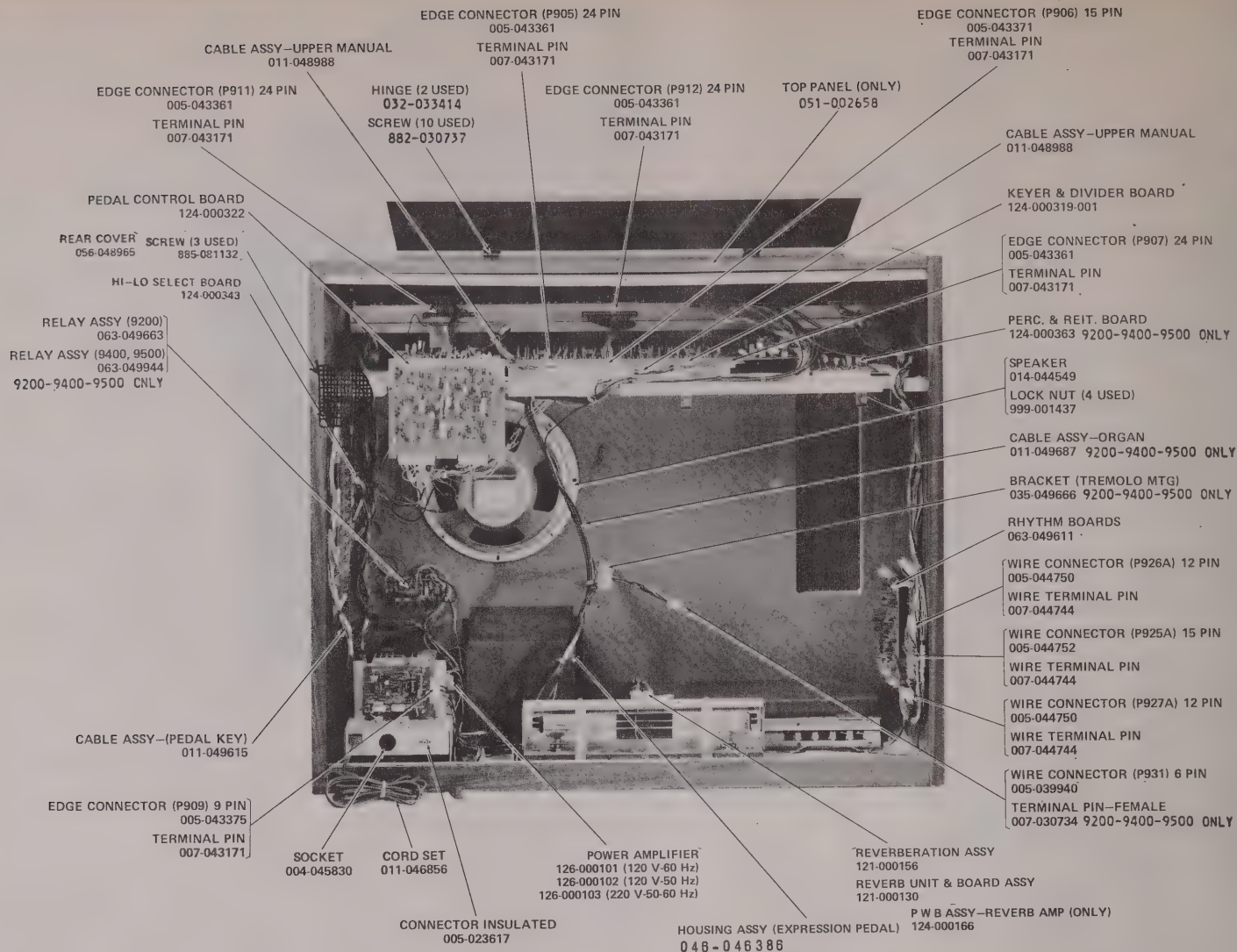
CONSOLE—FRONT VIEW 9600 MODEL



CONSOLE—TOP VIEW 9600 MODEL







REAR VIEW OF CONSOLE MODEL 9600

END BLOCK ASSEMBLY

125-000116 (9600 Series)

VOICING & SWITCHING BOARD (ONLY)

124-000386 (ALSO SEE PAGE

END BLOCK & ROCKER TAB ASSY. (ONLY)

060-050981

ROCKER TABS

- 031-050966-028 - OFF/VIBRATO/ON
- 031-050966-029 - SMALL/VIBRATO/NORMAL
- 031-050966-001 - TIBIA 16'
- 031-050966-002 - CELLO 16'
- 031-050966-005 - TIBIA 8'
- 031-050966-006 - VIOLIN 8'
- 031-050966-026 - HORN 8'
- 031-050966-016 - REVERB I
- 031-050966-017 - REVERB II
- 031-050966-046 - PEDAL ACCENT
- 031-050966-034 - PEDAL SUSTAIN
- 031-050966-004 - DIAPASON 8'
- 031-050966-020 - FLUTE 8'
- 031-050966-025 - STRING 8'

END BLOCK (ONLY)

061-050982

COVER

046-049594

NUT

999-001113

LOCKWASHER

999-000725

FILLER BLOCKS

- 025-049586 (TAB SIZE)
- 025-049588 (LEFT HAND SIDE)
- 025-049587 (RIGHT HAND SIDE)

DETENT SPRING

012-045254

PIVOT SHAFT

020-049583

SPRING KEEPER (ANG)

035-050903

RETAINER SPRING

013-050961

FELTS

- 042-049584 (FRONT)
- 042-050684 (REAR)

SCREW (12 USED)

924-051034

SCREW (4 USED)

885-070533

124-000386 VOICING PREAMP BOARD

PWB (NO PARTS)	023-051020
TRANSISTORS	
Q1, Q3	001-021260
Q2, Q4	001-021133
Q6, Q7	001-021134
Q5	001-021172
DIODES	
SIGNAL	
D1, D2	001-226080
RESISTORS (OHMS)	
47	600-220171
220	600-220331
330	600-220371
390	600-220391
3.3K	600-220611
10K	600-220731
15K	600-220771
18K	600-220791
22K	600-220811
27K	600-220831
33K	600-220851
39K	600-220871
47K	600-220891
82K	600-220951
100K	600-220971
150K	600-221011
220K	600-221051
270K	600-221071
470K	600-221131
1.0M	600-221211
1.5M	600-221-251
2.2M	600-221291
10K Trimmer Pot 1/8 W 30%	676-000064
100K Trimmer Pot 1/8W 30%	676-000073
CAPACITORS	
MYLAR	
.0012 MFD	412-110582
.0056 MFD	412-110692
.033 MFD	412-110482
.039 MFD	412-110652
.047 MFD	412-110512
.068 MFD	412-110632

124-000386 VOICING & PREAMP BOARD CONTINUED

.10 MFD	412-110522
.22 MFD	412-110532
CERAMIC	
100 MFD	426-101253
390 MFD	426-010393
ELECTROLYTIC	
4.7 MFD 50 V	431-056509
10 MFD 50 V	431-106509
100 MFD 25 V	431-107259
FILTER CHOKE	
L1	003-037670
SW WIPER CONTACT	
W1 - W14	030-049591
CONTACT	
CT1 - CT 14	030-049592

UPPER & LOWER MANUAL ASSEMBLIES
(SEE PAGE 4-3 AND 4-11 FOR REFERENCE)

UPPER MANUAL ASSY.

119-000068

LOWER MANUAL ASSY.

119-000069

COMMON PARTS

MANUAL PWB ASSY #1

023-045694-003

MANUAL PWB ASSY #2

023-045695-003

KEYS & SPRING ASSEMBLIES

057-045707-005 ("F" TO "CX")

057-045708-005 ("F" TO "B")

057-045709-005 ("C" TO "E")

DOWN STOP FELT

042-045676

POLY, FILM TAPE

039-051025

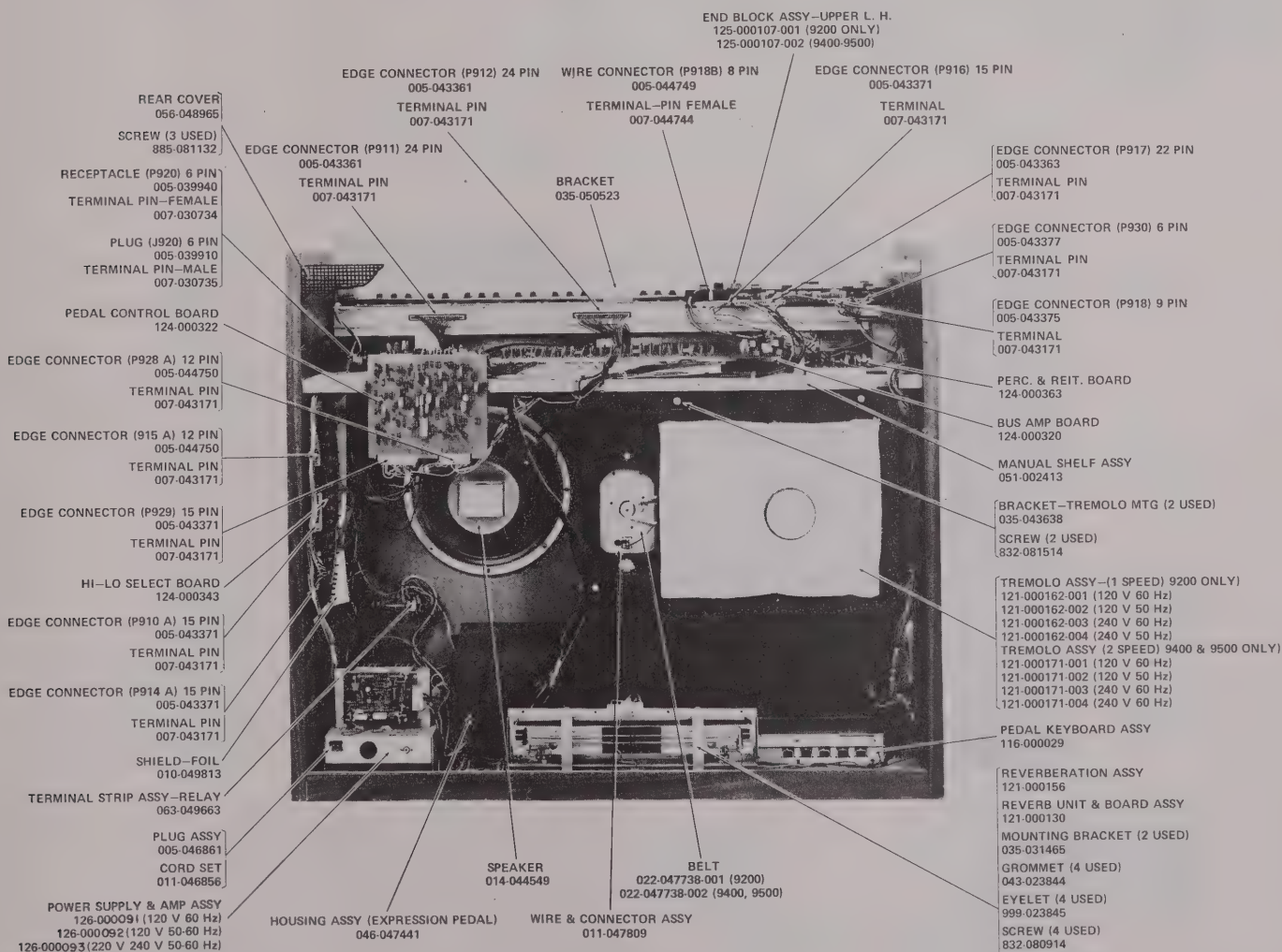
SWITCH ACTUATOR

025-047278

Printed Wiring Board

Resistor, Fixed	100 ohms	$\frac{1}{2}W$	R8,9	600-220251
Resistor, Fixed	270 ohms	$\frac{1}{2}W$	R1	600-220351
Resistor, Fixed	4.7K ohms	$\frac{1}{2}W$	R4,7	600-220651
Resistor, Fixed	10K ohms	$\frac{1}{2}W$	R12,15	600-220731
Resistor, Fixed	15K ohms	$\frac{1}{2}W$	R5,6	600-220771
Resistor, Fixed	27K ohms	$\frac{1}{2}W$	R27,31	600-220831
Resistor, Fixed	47K ohms	$\frac{1}{2}W$	R2,20,24,26	600-220891
Resistor, Fixed	56K ohms	$\frac{1}{2}W$	R13	600-220911
Resistor, Fixed	100K ohms	$\frac{1}{2}W$	R10,14,17,19,21	600-220971
Resistor, Fixed	150K ohms	$\frac{1}{2}W$	R3,28,29,30,32,33	600-221011
Resistor, Fixed	220K ohms	$\frac{1}{2}W$	R18,25	600-221051
Resistor, Fixed	390K ohms	$\frac{1}{2}W$	R11,16	600-221111
Resistor, Fixed	470K ohms	$\frac{1}{2}W$	R22	600-221131
Resistor, Fixed	680K ohms	$\frac{1}{2}W$	R23	600-221171
Capacitor, Tantalum			C1	414-240092
Capacitor, Mylar	.022 ufd		C4	412-110482
Capacitor, Mylar	.01 ufd		C3,5	412-110462
Capacitor, Electrolytic	200 ufd		C2	431-207359
Diodes, Silicon			D1,2,3,4,5,6	001-226080
Transistor			Q1,2,4,5,6,7,8,9	001-021133
Transistor			Q3	001-021172
Selector Switch			S1,2,3,4,5	008-048864
Connector 12-Way			J927,928	005-044738
Lamp				016-045804

NOTE: SEE PAGE 4-6 FOR OTHER RHYTHM END BLOCK BOARD (124-000171-001)



CONSOLE-REAR VIEW-TOP PANEL REMOVED (9200-9400-9500 MODELS)

Printed Wiring Board

Resistor, Fixed	100 ohms	1/2W
Resistor, Fixed	150 ohms	1/2W
Resistor, Fixed	330 ohms	1/2W
Resistor, Fixed	470 ohms	1/2W
Resistor, Fixed	680 ohms	1/2W
Resistor, Fixed	820 ohms	1/2W
Resistor, Fixed	1K ohms	1/2W
Resistor, Fixed	1.5K ohms	1/2W
Resistor, Fixed	2.2K ohms	1/2W
Resistor, Fixed	4.7K ohms	1/2W
Resistor, Fixed	5.6K ohms	1/2W
Resistor, Fixed	10K ohms	1/2W

Resistor, Fixed	12K ohms	1/2W
Resistor, Fixed	15K ohms	1/2W

Resistor, Fixed	18K ohms	1/2W
Resistor, Fixed	22K ohms	1/2W

Resistor, Fixed	27K ohms	1/2W
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Resistor, Fixed	33K ohms	1/2W
Resistor, Fixed	39K ohms	1/2W
Resistor, Fixed	47K ohms	1/2W
Resistor, Fixed	56K ohms	1/2W
Resistor, Fixed	82K ohms	1/2W
Resistor, Fixed	100K ohms	1/2W

Resistor, Fixed	120K ohms	1/2W
Resistor, Fixed	150K ohms	1/2W
Resistor, Fixed	180K ohms	1/2W
Resistor, Fixed	220K ohms	1/2W
Resistor, Fixed	220K ohms	1/2W
Resistor, Fixed	270K ohms	1/2W
Resistor, Fixed	470K ohms	1/2W
Resistor, Fixed	560K ohms	1/2W
Resistor, Fixed	680K ohms	1/2W
Resistor, Fixed	1M ohms	1/2W
Resistor, Fixed	2.2M ohms	1/2W
Resistor, Fixed	10M ohms	1/2W

Capacitor, Ceramic	.001 ufd
Capacitor, Mylar	.0022 ufd
Capacitor, Mylar	.01 ufd

R16	023-048981
R34	600-220251
R20, 80	600-220292
R47	600-220371
R4, 32	600-220411
R70	600-220451
R95	600-220472
R17, 22, 68	600-220491
R26	600-220531
R62	600-220571
R87	600-220651
R7, 8, 18,	600-220671
27, 35, 36,	600-220731
59, 92, 98	

R55	600-220751
R5, 15, 31, 10,	600-220771

R45, 46	600-220791
R56, 65, 66,	600-220811

67, 71, 72	600-220831
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R14, 38, 46,	600-220851
52, 58, 61,	600-220871
64, 81, 84,	
86	
R12, 13, 100	600-220891
R75, 76	600-220911
R53, 78, 85, 94, 51	600-220952
R11, 14, 23	600-220971
R42, 43	
R21, 39, 54,	
60, 63, 73,	
88, 97, 6,	
9, 33, 77,	
37, 101	

R93	600-220992
R49, 82	600-221011
R48	600-221031
R69	600-221052
R3, 30, 57	600-221071
R24	600-221132
R90, 91	600-221151
R74	600-221171
R50, 83	600-221211
R25	600-221292
R89	600-221451
R1, 28	426-010502
C12, 13	412-110592
C14, 15	412-110462
C1, 7, 5	

Capacitor, Mylar	.022 ufd
Capacitor, Mylar	.033 ufd
Capacitor, Mylar	.047 ufd
Capacitor, Mylar	.1 ufd
Capacitor, Mylar	.15 ufd
Capacitor, Mylar	.22 ufd
Capacitor, Tantalum	.47 ufd
Capacitor, Tantalum	2.2 ufd
Capacitor, Tantalum	6.8 ufd
Capacitor, Electrolytic	100 ufd
Capacitor, Electrolytic	100 ufd
Diode, Silicon	
Transistor	

Transistor	
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Transistor	
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Transistor	
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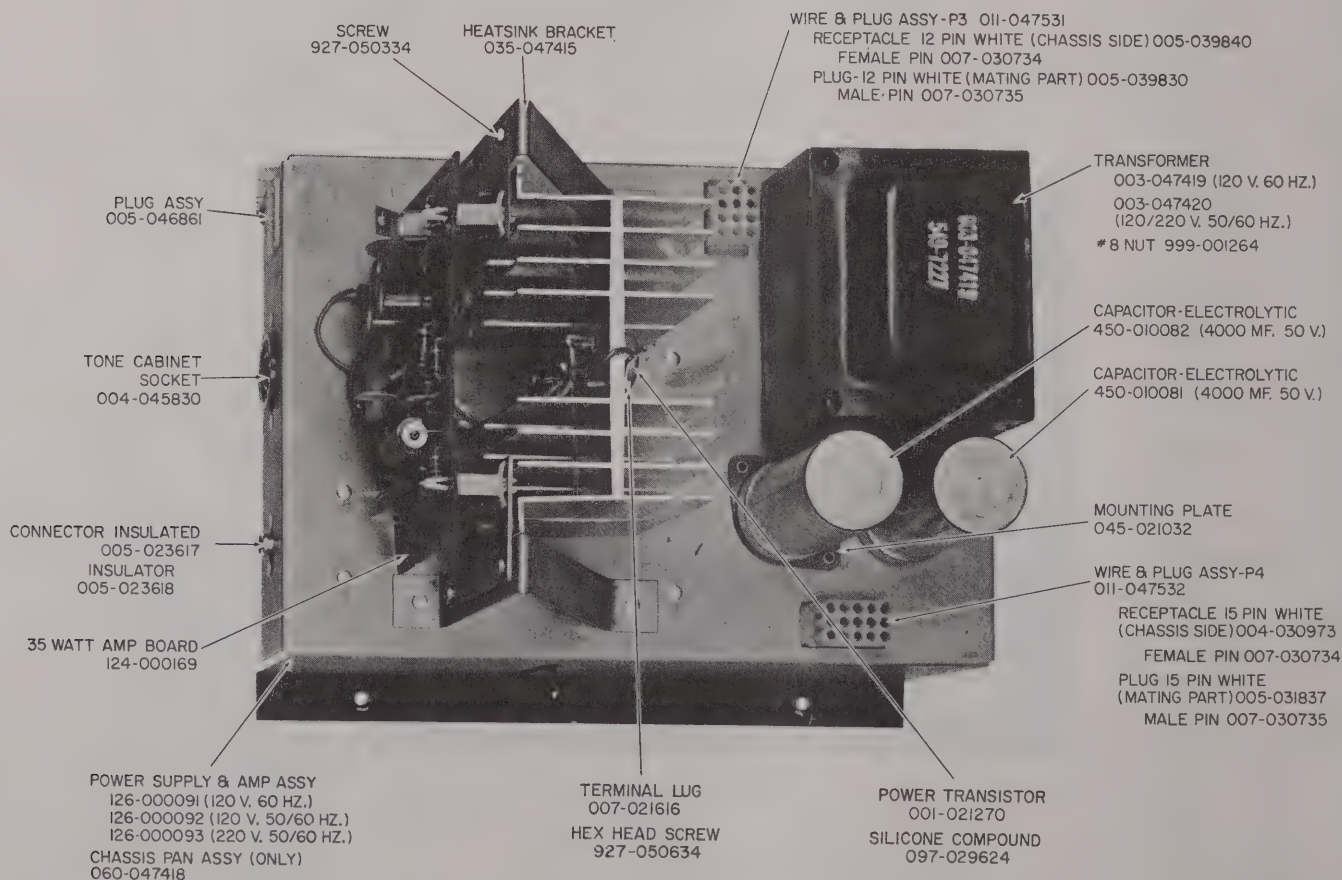
C22	412-110482
C17, 24, 35	412-110502
C31, 32	412-110512
C11, 16, 19, 27, 20,	412-110522
26	
C10, 3	412-110642
C21, 34	412-110532
C18, 25	414-240052
C33	414-240112
C6	414-240222
C9, 23	432-107159
C4	431-107509
D1 THRU 24	001-226080
Q9, 10, 11,	001-021172
16, 17, 18,	
19, 20, 22,	
24, 26, 27, 29	
Q5, 6, 7,	001-021133
8, 25, 21,	
28, 30, 31	
Q1, 2, 3,	001-021135
4, 12, 13, 14, 15	
Q23	001-021173

124-000343 HI-LO SELECT PWB ASSEMBLY

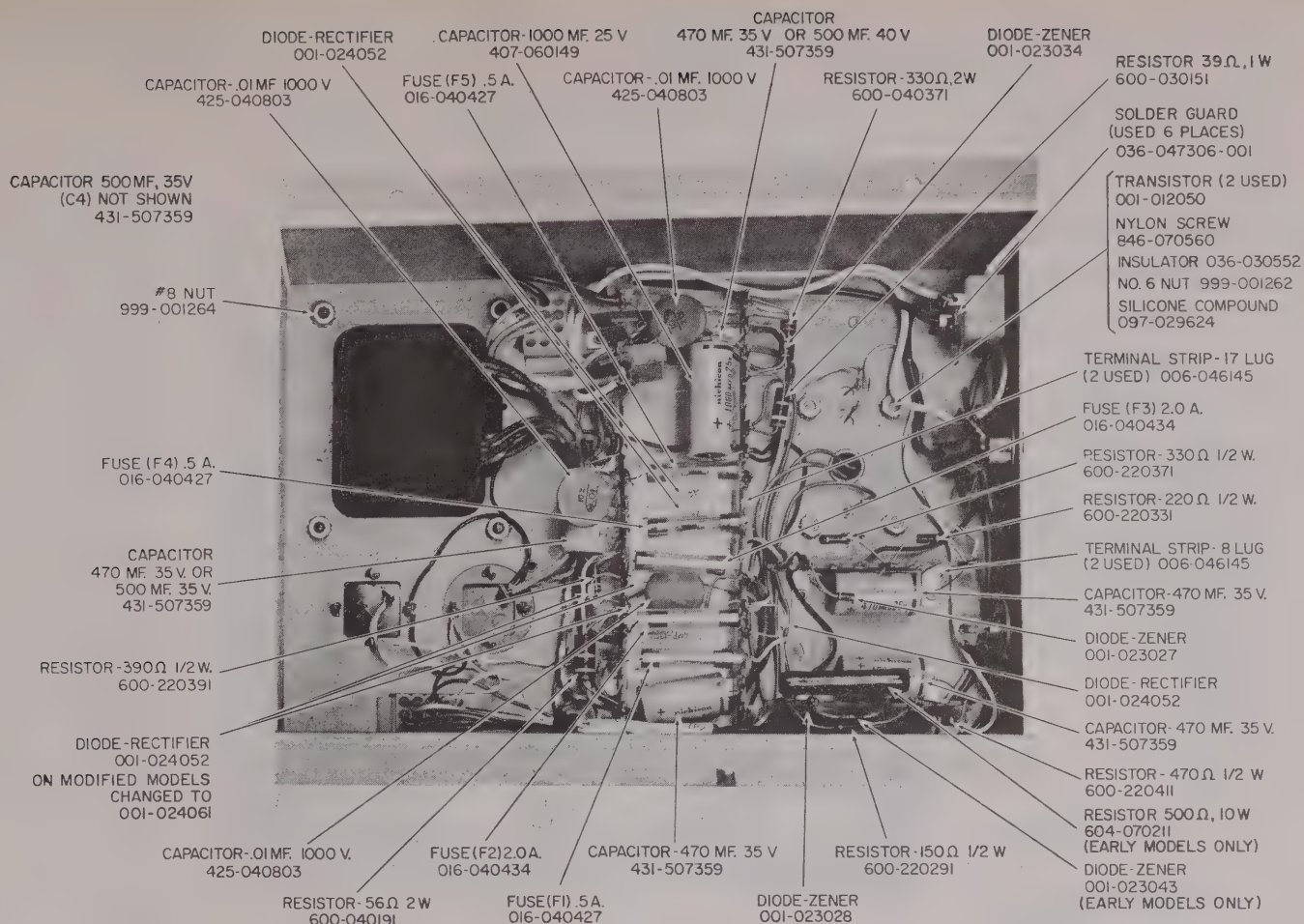
Printed Wiring Board

Resistor, Fixed	470 ohms	1/2W
Resistor, Fixed	10K ohms	1/2W
Resistor, Fixed	22K ohms	1/2W
Resistor, Fixed	27K ohms	1/2W
Resistor, Fixed	47K ohms	1/2W
Resistor, Fixed	560K ohms	1/2W
Capacitor, Electrolytic	4.7 ufd	
Diode, Silicon		
Transistor		

R42 THRU 54	023-049622
R95 THRU 107	600-220411
R1 THRU 21	600-220731
R22 THRU 41	600-220811
R62 THRU 81	600-220831
R82 THRU 94	600-220891
C1 THRU 13	600-221151
D1 THRU 106	431-056509
Q1 THRU 20	001-226080
	001-021172

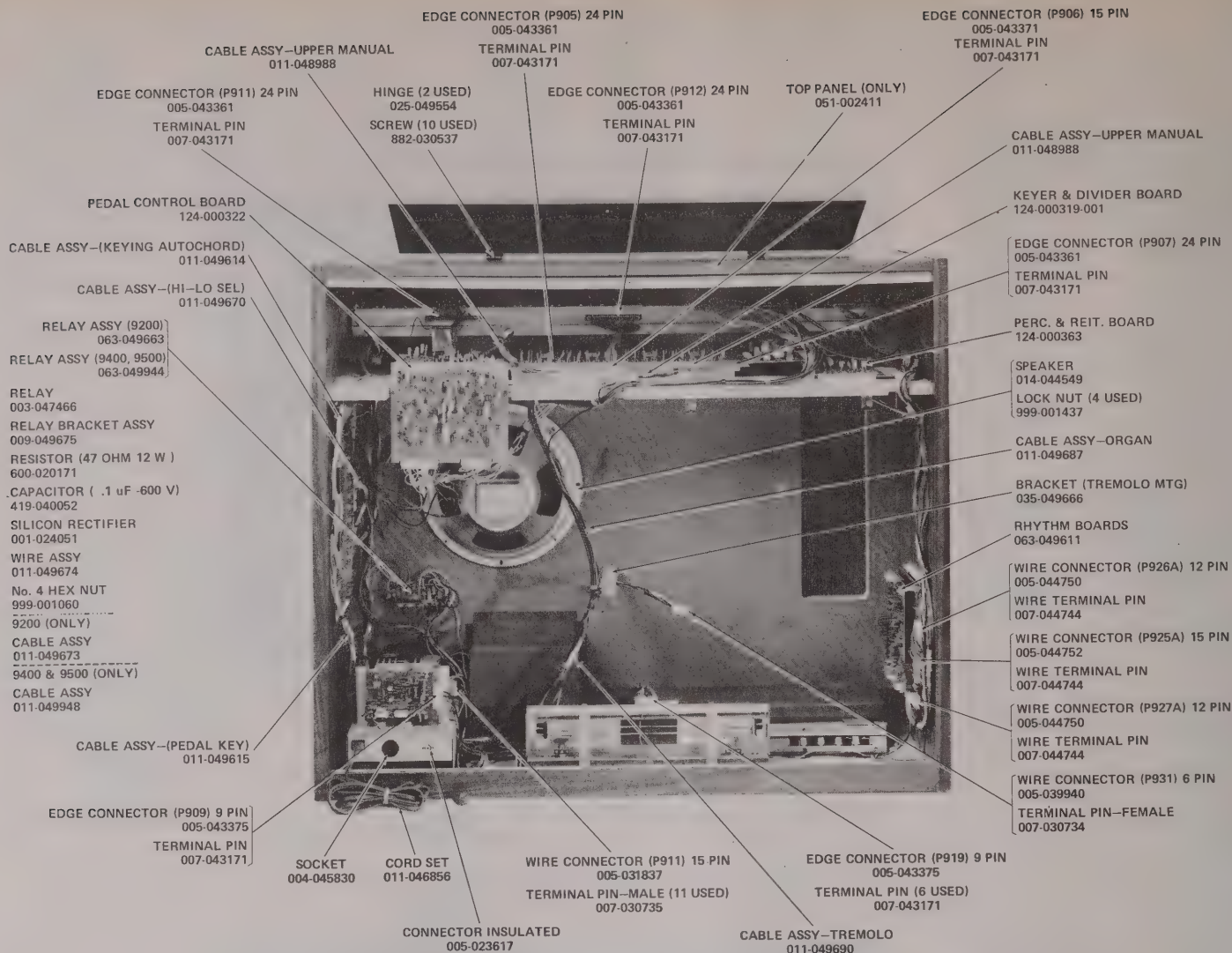


Amplifier Assembly (Top View) I26-000091 Thru 93



124-000166 REVERB AMP ASSEMBLY

Resistor, Fixed	5.6 ohms	$\frac{1}{2}W$	R16	600-221571
Resistor, Fixed	10 ohms	$\frac{1}{2}W$	R6	600-220011
Resistor, Fixed	12 ohms	$\frac{1}{2}W$	R17,18	600-220031
Resistor, Fixed	180 ohms	$\frac{1}{2}W$	R15	600-220311
Resistor, Fixed	330 ohms	$\frac{1}{2}W$	R12	600-220371
Resistor, Fixed	680 ohms	$\frac{1}{2}W$	R24	600-220451
Resistor, Fixed	470 ohms	$\frac{1}{2}W$	R14	600-220411
Resistor, Fixed	820 ohms	$\frac{1}{2}W$	R22	600-220471
Resistor, Fixed	1.5K ohms	$\frac{1}{2}W$	R4,9	600-220531
Resistor, Fixed	2.7K ohms	$\frac{1}{2}W$	R13	600-220591
Resistor, Fixed	4.7K ohms	$\frac{1}{2}W$	R7,8,25,26	600-220651
Resistor, Fixed	10K ohms	$\frac{1}{2}W$	R10,19	600-220731
Resistor, Fixed	33K ohms	$\frac{1}{2}W$	R1,2,3	600-220851
Resistor, Fixed	47K ohms	$\frac{1}{2}W$	R11	600-220891
Resistor, Fixed	100K ohms	$\frac{1}{2}W$	R23,27	600-220971
Resistor, Fixed	330K ohms	$\frac{1}{2}W$	R21	600-221091
Resistor, Fixed	470K ohms	$\frac{1}{2}W$	R5	600-221131
Potentiometer	50K ohms		R20	676-000069
Capacitor, Electrolytic	5 ufd		C3	407-080539
Capacitor, Electrolytic	5 ufd		C11	431-056509
Capacitor, Electrolytic	100 ufd		C4	407-060349
Capacitor, Electrolytic	200 ufd		C6	431-207359
Capacitor, Mylar	.22 ufd		C2,9	412-110532
Capacitor, Mylar	.0015 ufd		C8	413-110012
Capacitor, Ceramic	220 pfd		C1,10	426-010332
Capacitor, Ceramic	.05 ufd		C5	427-170095
Diode, Silicon			D1,2	001-226080
Transistor			Q7	001-021260
Transistor			Q1	001-021070
Transistor			Q2,3,8	001-021133
Transistor			Q5	001-021232
Transistor			Q4	001-022032



REAR VIEW OF CONSOLE WITH TREMOLO ASSY REMOVED (9200-9400-9500 MODELS)

APPENDIX

NEW INNOVATIONS OF CURRENT PRODUCTS

GENERAL -

9200 SERIES - SERIAL 340399 & ABOVE

This Appendix includes revised and updated information which should bring HO-1288, 9000 Service Manual up-to-date.

It covers End Block Assembly (125-000118), Voicing and Pre-Amp Board (124-000387), Repeat & Percussion Board (124-000388) Upper and Lower Manuals, Revised Logic and Wiring Diagrams, Technical Bulletins and an update on Pedal Control Board (124-000322) and Parts List.

9400 AND 9500 SERIES

This section also contains latest information on these Models. It includes the End Block Assembly (125-000118-001), Voicing and Pre-Amp Board (124-000387), Repeat and Percussion Board (135-000388), Upper and Lower Manuals, Revised Logic and Wiring Diagrams, Added Speaker and update on Parts List.

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2- 3 Transistor Replacement for MDD Generator Board...(124-000318).....	A- 4
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UPDATED PARTS LIST

9100 SERIES	A-17
9200, 9400 and 9500	A-17
	and A-18

2-1

SUBJECT: REMOVAL OF TRANSIENT SUPPRESSION DIODES FROM
MDD PWB ASSEMBLIES

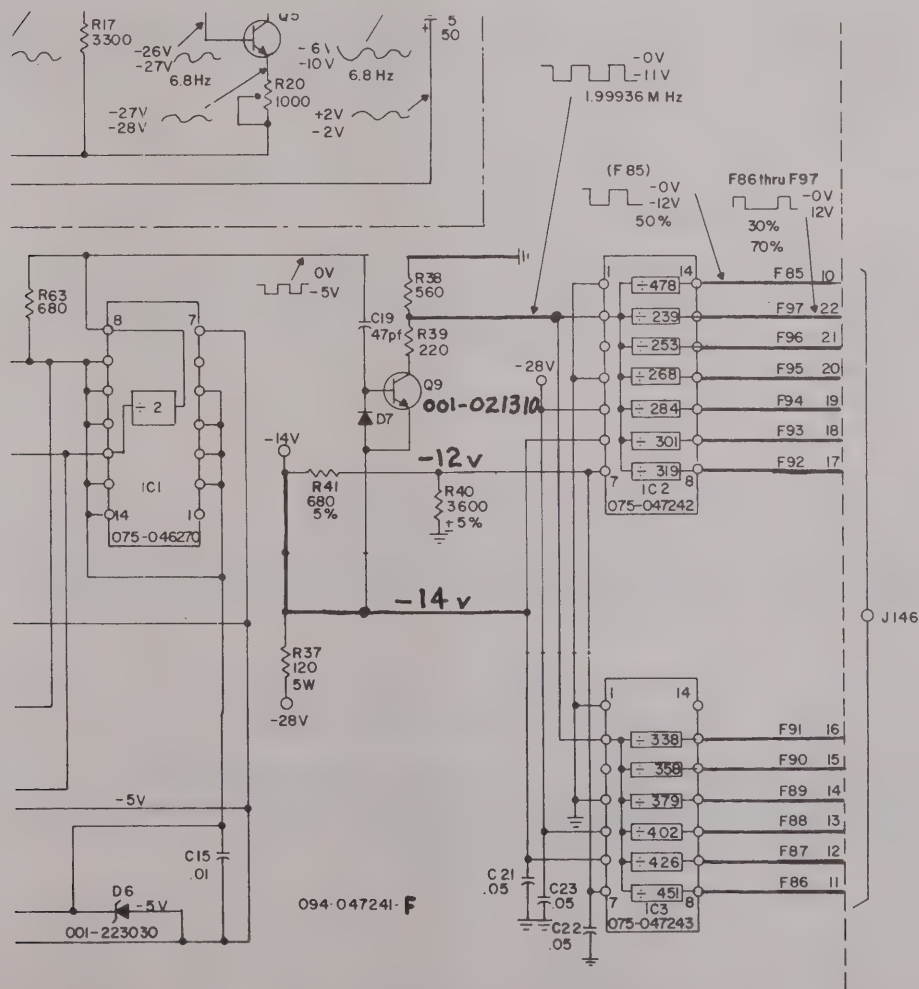
NATURE OF CHANGE:

124-000318-00A - Diodes D12 through D24 removed
R37 added

124-000265-00A - Diodes D12 through D24 removed
R37 added

124-000266-00A - Diodes D12 through R24 removed
R37 added

NOTE: Diodes D8 through D11 were previously removed from the MDD Boards along with R37, R39, and C20. R37 had to be reinstalled in the board to maintain current requirements. The area in the schematic for the MDD boards affected is shown below in its most up to date form.



2-2

SUBJECT: TRANSIENT SUPPRESSOR DIODES REMOVED
FROM 124-000319 (DAUGHTER BOARDS)

NATURE OF CHANGE:

Diodes D1 through D12 removed.

This change has improved the quality and the reliability of the assemblies.

Latest versions of the above board is being produced without external diode protection. It is well to remember, however, that loose PWB's still must be handled with care, especially when the relative humidity is low, the environment is conducive to static electricity build-up.

It is recommended that in transporting loose, individual boards, they be wrapped in tin or aluminum foil or have conductive chips to short all the contact pins together.

2-3

SUBJECT: TRANSISTOR REPLACEMENT FOR M.D.D. GENERATOR BOARD

For those of you who may not have an 001-021310 transistor in their kit, the replacement part that can be used is a 2N4123. You will find this new transistor (001-021310) being used as follows on future boards as of now in place of the 001-021133.

1. Q6, Q7, Q9 on 124-000265, 124-000318.
2. Q8, Q9 on 124-000266

We have also changed capacitors on this board so when ordering the capacitors C10, C14, or C15--the part number will be 426-010743 instead of 426-010752. The value is the same except the size is smaller. NOTE: the old capacitors can still be ordered.

2-4

SUBJECT: TREMOLO MOTOR FAILURE

A possible cause of high speed motor burnouts has been traced to the low speed motor shaft engaging the idler wheel during shipment, and preventing the high speed motor from turning.

This locked condition will clear itself if the low speed motor is energized prior to using the high speed. Once cleared, the locked condition does not recur.

ALL DEALERS AND TECHNICIANS ARE ADVISED TO FOLLOW THE PROCEDURE OF ENERGIZING THE LOW SPEED TREMOLO FIRST, FOLLOWED BY THE HIGH SPEED. VERIFY THAT THE DRUM IS ROTATING IN BOTH MODES WHEN INSTALLING ORGANS.

2-5

SUBJECT: TROUBLESHOOTING RHYTHM VOICING BOARD 124-000194

After the problem has been isolated to this board first check to see if the board is receiving +25 V and is properly grounded.

The inputs to the bases of the six NPN transistors Q301, Q303, Q305, Q307, Q311, and Q313 are negative pulses, which bias the conducting transistor off. The voltage for the collectors of these transistors are provided by pulse gate PNP transistor, Q134, which is forward biased (turned on) by a negative pulse. If the NPN transistor will not turn off, a simple procedure is to short base to emitter. A good transistor will turn off and the collector voltage should go to +15 V.

The next check is the diodes D302, D303, and D304. A positive pulse on the anode will forward bias the diodes and charge the capacitors C311, C315 and C317. The transistor in the phase shift oscillator, Q304, Q306, and Q308 is forward biased by the positive charge on the capacitor and the stage breaks into oscillation.

The two diodes D305 and D306 conduct the positive pulses to the base of transistors Q312 and Q315. These two amplifiers have in the collector circuit a tank composed of L301, C325 and L302, C330. The brush amplifier has a resistor across the tank to increase band width. If the transistor and the inputs are good, check the components in the tank circuit for value change.

The stage with Q318 is used for frequency muting with each snare drum trigger pulse.

The output amplifier consists of the two transistors Q316 and Q317. The two stages of the amplifier are dc coupled with negative feedback provided by R369 to prevent oscillation. The zener D308 in the collector circuit maintains a voltage drop of 13.5V to 16.5V across it, with R374 used to drop the collector to +8V.

In summary, if there is no signal output, a probable faulty stage would be the output amplifier. If only one voice such as Bass Drum, Temple Block or Wood Block is missing, then trace the signal flow from input to amplifier. When Snare Drum, Cymbal or Brush are all missing, check the white noise generating stage composed of Q309 and amplifier stage Q310.

SUBJECT: TAB SWITCH RETAINER SPRING

Following is a step by step procedure for the installation of four (4) retainer springs (013-050961) with four (4) mounting screws (885-070533) into the Tab Switch End Block Assembly. Installation of these springs will prevent the premature release of the End Block Tab Switches.

THE INSTRUCTIONS ARE IN TWO PARTS:

1. REMOVAL OF END BLOCK ASSEMBLY FROM INSTRUMENT.
2. INSTALLATION OF RETAINER SPRINGS.

1. REMOVAL OF END BLOCK ASSEMBLY.

- A. Remove the three 5/16" hex screws to remove the back cover.
- B. Remove two 1/4" hex bolts from the top which are located underneath the back support rail. Remove the top by lifting straight up.
- C. Next remove the two black snaps which secure the top of the organ by removing the four 1/4" hex screws. The snaps are located on both sides of the cabinet.
- D. Remove the 1/4" hex stud, which is located on the left hand side behind the upper manual.
- E. Remove the two 5/16" hex screws located in the grooves of the manual cover. Then slide the manual cover out the back of the organ.
- F. Remove the two upper manual 7/16" hex bolts located under the front of the organ.
- G. Remove the edge connectors from the voice and preamp, P.W.B. before lifting the upper manual.
- H. Lift the upper manual and remove the seven 1/4" hex screws securing the upper manual left hand End Block. Before lifting the End Block remove the two ground wires fastened by a 3/16" hex screw located behind the upper manual.
- I. Remove the End Block from the organ before starting the disassembly procedure of the End Block.

2. INSTALLATION OF RETAINER SPRINGS.

- A. Upon removing the End Block from the organ, place strips of masking tape across all the Rocker Switches to insure easy reinstallation.

- B. Each row of switches is suspended on one continuous rod running through the center of each switch. After applying the masking tape to the switches, lift the switches with your fingers on the top edge, EVENLY ACROSS THE SWITCHES.
- C. Upon removing all the Rocker Switches, remove the two 1/4" hex screws from the card board strip underneath the End Block.
- D. Next remove the twelve (12) 1/4" hex screws which secure the Voicing and Preamp. P.W.B. to the plastic End Block.
- E. LIFT THE P.W.B. CAREFULLY TO PREVENT DAMAGE TO THE WIRE CONTACTS AND THE WIRES THAT CONNECT THE REITERATION RATE CONTROL.
- F. Upon lifting the P.W.B. from the plastic End Block, insert the 1/4" hex screws (885-070533) in the existant holes in the End Block Moulding in the locations designated in Figure 1. The screws are then tapped into the metal clips (shown in Figure 2.) which will be placed on top of the End Block in between the support arms for the rod that suspends the Rocker Switches. (Also designated on the diagrams)
- G. After inserting the metal clips reverse the entire disassembly procedure for reinstalling the End Block into the organ.

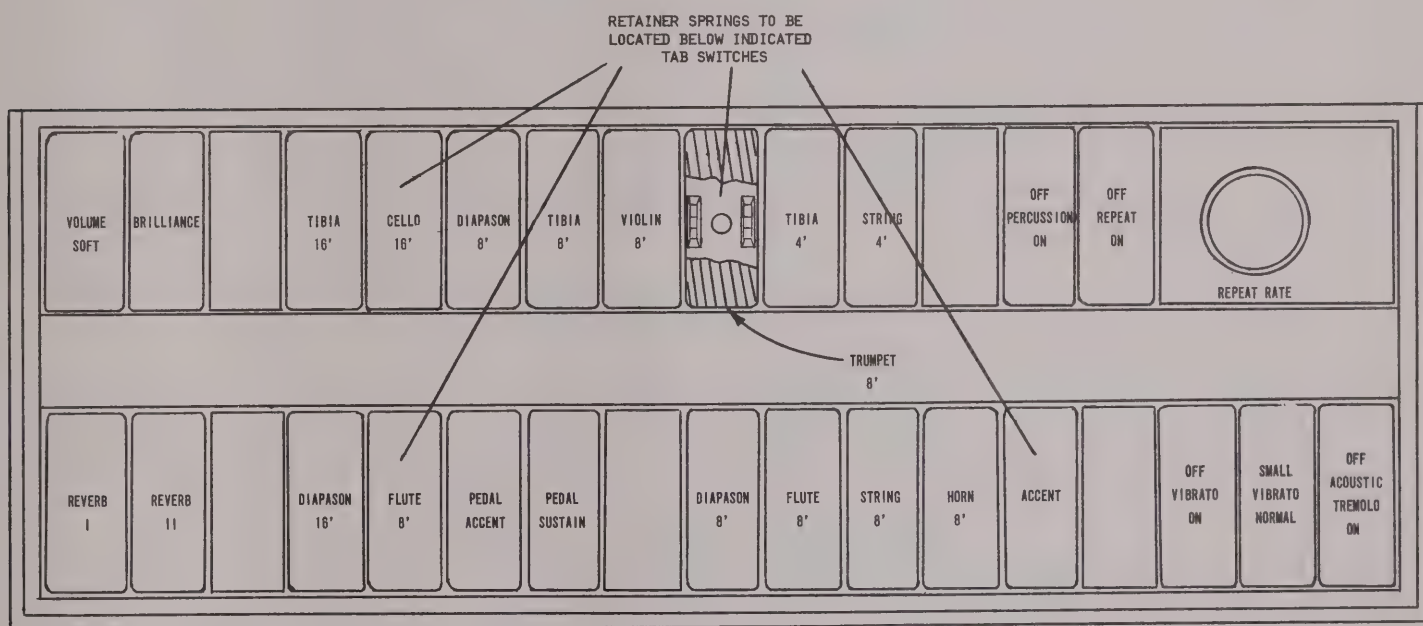


FIGURE 1

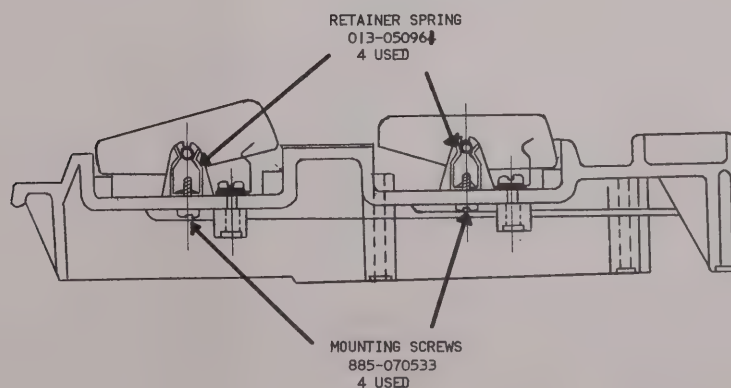
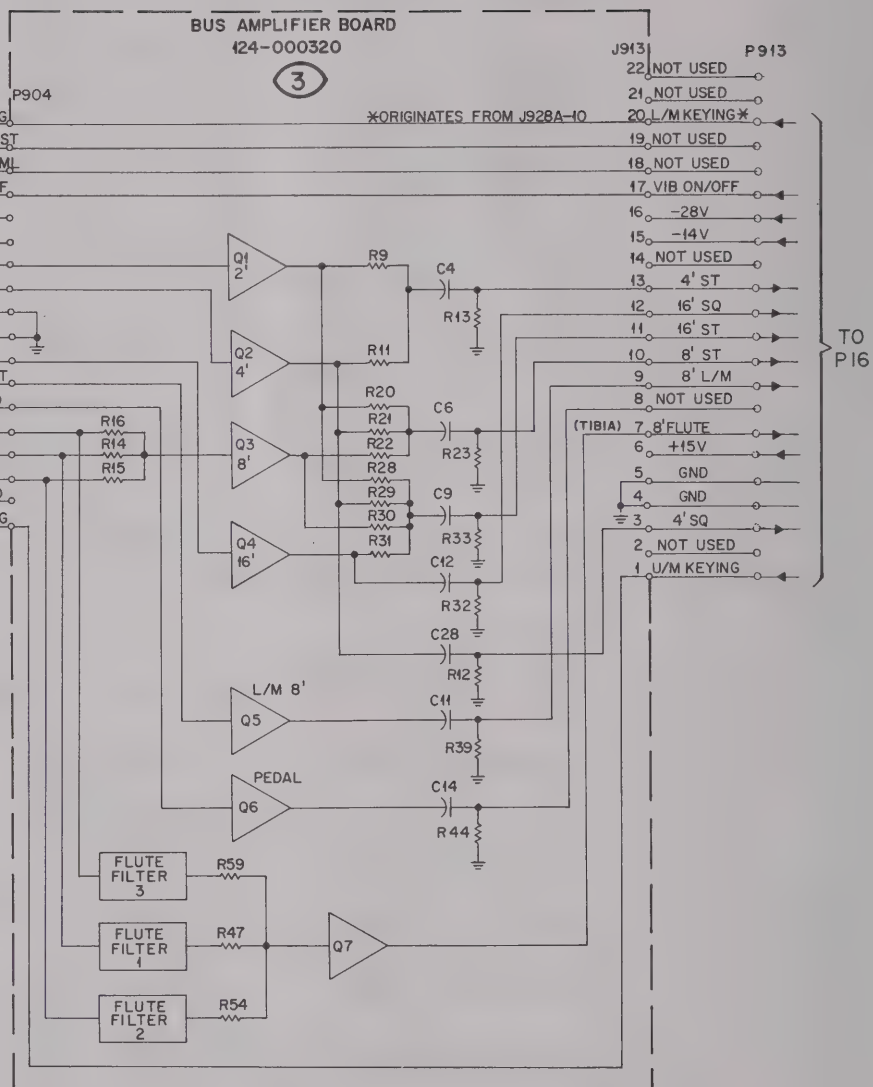
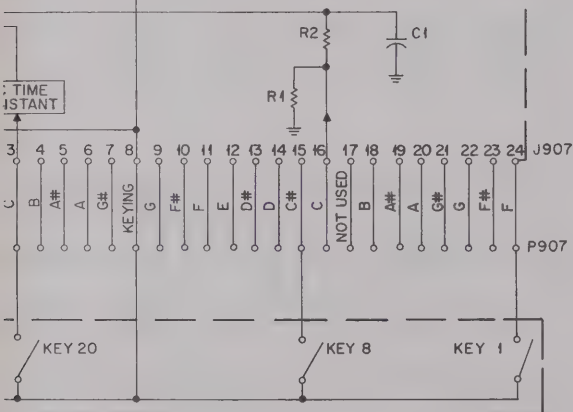
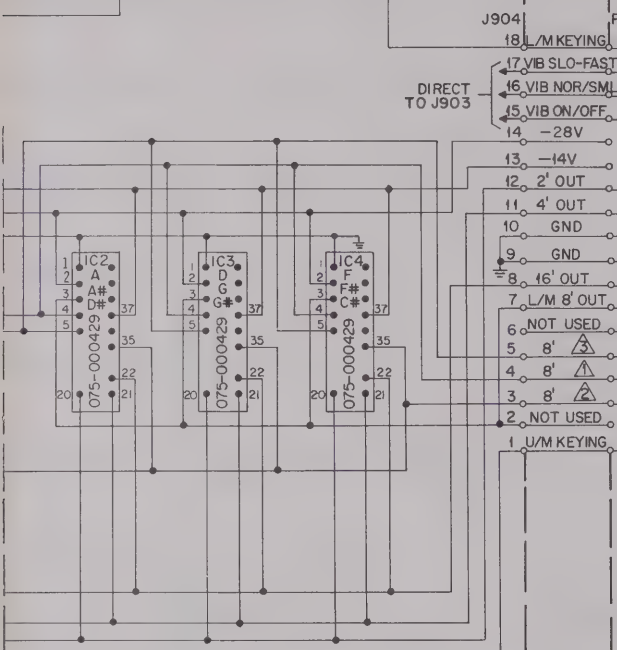
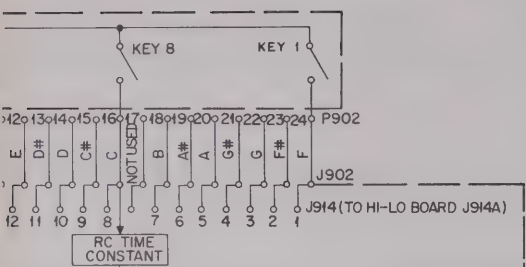


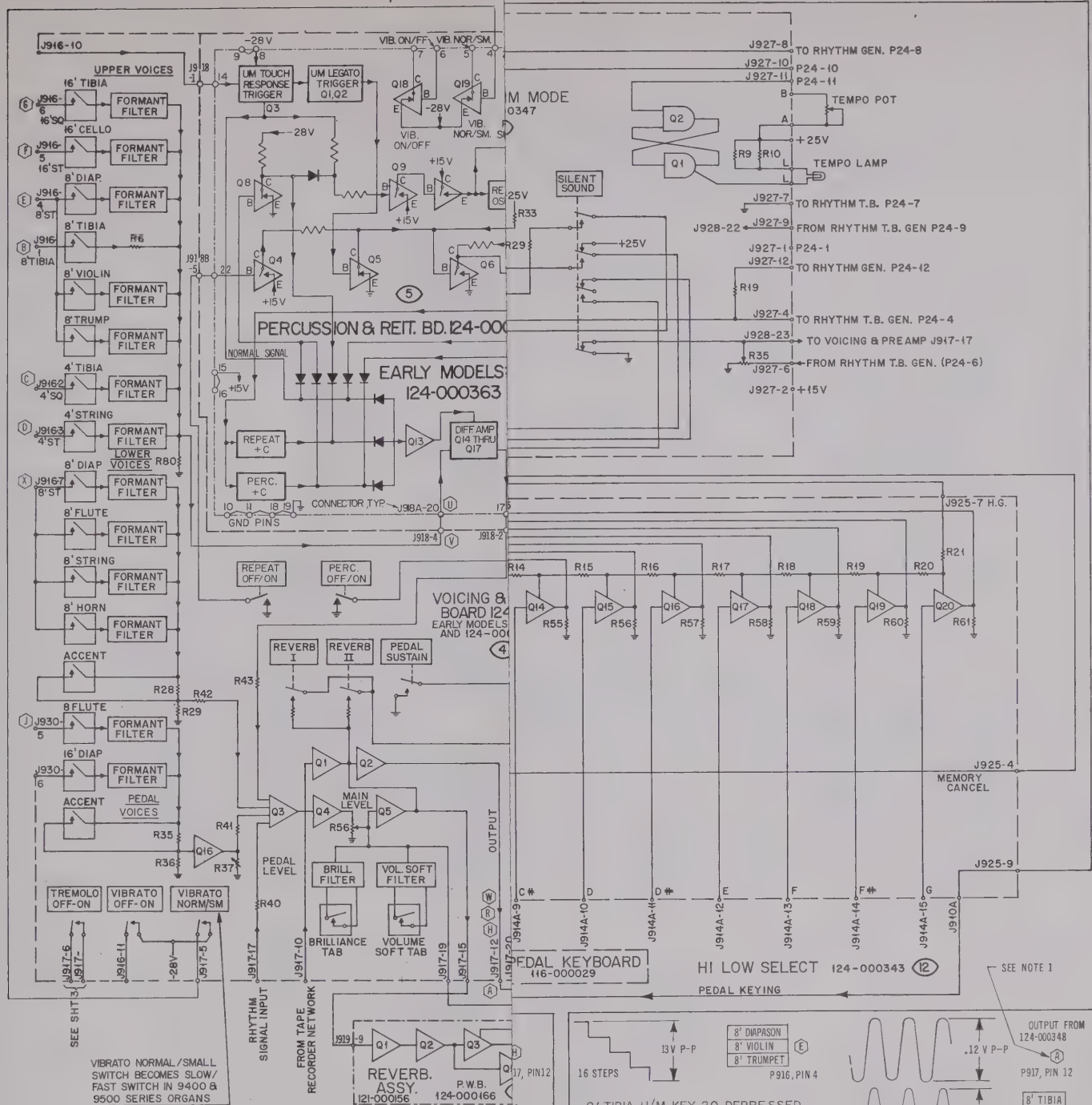
FIGURE 2

PRINTED WIRING BOARDS	RIES	9600 SERIES
124-000318 M.D.D. GENERATOR BOARD		124-000318
124-000319 KEYER/DIVIDER BOARD	001	124-000319-001
124-000320 BUS AMP BOARD		124-000320
124-000322 PEDAL CONTROL BOARD		124-000322
124-000343 HI LO SELECT BOARD		124-000343
124-000347 RHYTHM MODE BOARD		124-000347
124-000348 VOICING SWITCHING BOARD		<u>124-000386</u>
124-000363 PERC. & REIT BOARD		
POWER AMPLIFIER		124-000101 THRU 103
END BLOCK ASSY.		
UPPER LEFT HAND	<u>001</u>	<u>125-000116</u>
LOWER LEFT HAND	RHY.)	125-000108 (RHY.)
LINE SWITCH ASSY - UPP		063-049218
LOWER RIGHT HAND		025-049142
TREMOLO ASSEMBLY	<u>001</u>	

CHART OF PRINTED WIRING BOARDS AND SOME MAJOR ASSEMBLIES USED PER 9,000 MODELS

	9100 SERIES	EARLY 9200 SERIES	9200 SERIES SERIAL #340399 & ABOVE	9400/9500 SERIES	9600 SERIES
PRINTED WIRING BOARDS					
124-000318 M.D.D. GENERATOR BOARD	124-000318	124-000318	124-000318	124-000318	124-000318
124-000319 KEYER/DIVIDER BOARD	124-000319	124-000319-001	124-000319-001	124-000319-001	124-000319-001
124-000320 BUS AMP BOARD	124-000320	124-000320	124-000320	124-000320	124-000320
124-000322 PEDAL CONTROL BOARD		124-000322	124-000322	124-000322	124-000322
124-000343 HI LO SELECT BOARD		124-000343	124-000343	124-000343	124-000343
124-000347 RHYTHM MODE BOARD		124-000347	124-000347	124-000347	124-000347
124-000348 VOICING SWITCHING BOARD	<u>124-000339</u>	124-000348	<u>124-000387</u>	<u>124-000387</u>	<u>124-000386</u>
124-000363 PERC. & REIT BOARD		124-000363	124-000388	124-000388	
POWER AMPLIFIER	126-000101 THRU 103	126-000091 THRU 93	126-000091 <u>THRU 93</u>	126-000091 <u>THRU 93</u>	124-000101 THRU 103
END BLOCK ASSY.					
UPPER LEFT HAND	<u>125-000107</u>	<u>125-000107-001</u>	<u>125-000118</u>	<u>125-000118-001</u>	<u>125-000116</u>
LOWER LEFT HAND	<u>025-048902</u>	125-000108 (RHY.)	125-000108 (RHY.)	125-000108 (RHY.)	125-000108 (RHY.)
LINE SWITCH ASSY - UPPER R/H	063-049218	063-049218	063-049218	063-049218	063-049218
LOWER RIGHT HAND	025-049142	025-049142	025-049412	121-000165 (CASSETTE 9500 ONLY)	025-049142
TREMOLO ASSEMBLY		121-000162-001 THRU 004	121-000171-001 THRU 004	121-000171-001 <u>THRU 004</u>	





NOTES:

1. TYPICAL SYMBOL "A" INDICATES TERMINAL LOCATION ON DIAGRAM.
2. LETTER "J" INDICATES P.W.B. CONNECTOR & LETTER "P" INDICATES PLUG.
3. UNLESS OTHERWISE SHOWN, ALL SWITCHES ARE IN "OFF" POSITION.

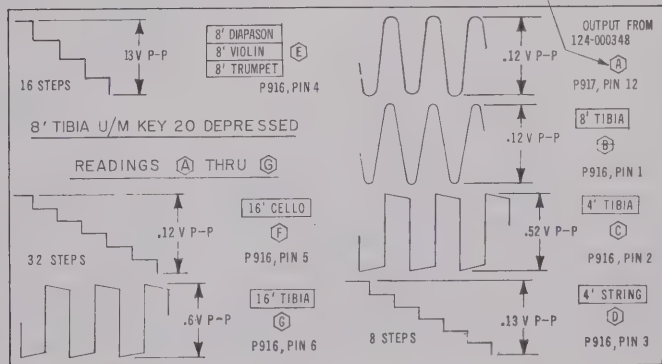


FIGURE A-2
9200, 9400 AND 9500 SERIES
CONSOLE LOGIC DIAGRAM
SERIAL #340399 AND ABOVE
(SHEET 2 OF 3)

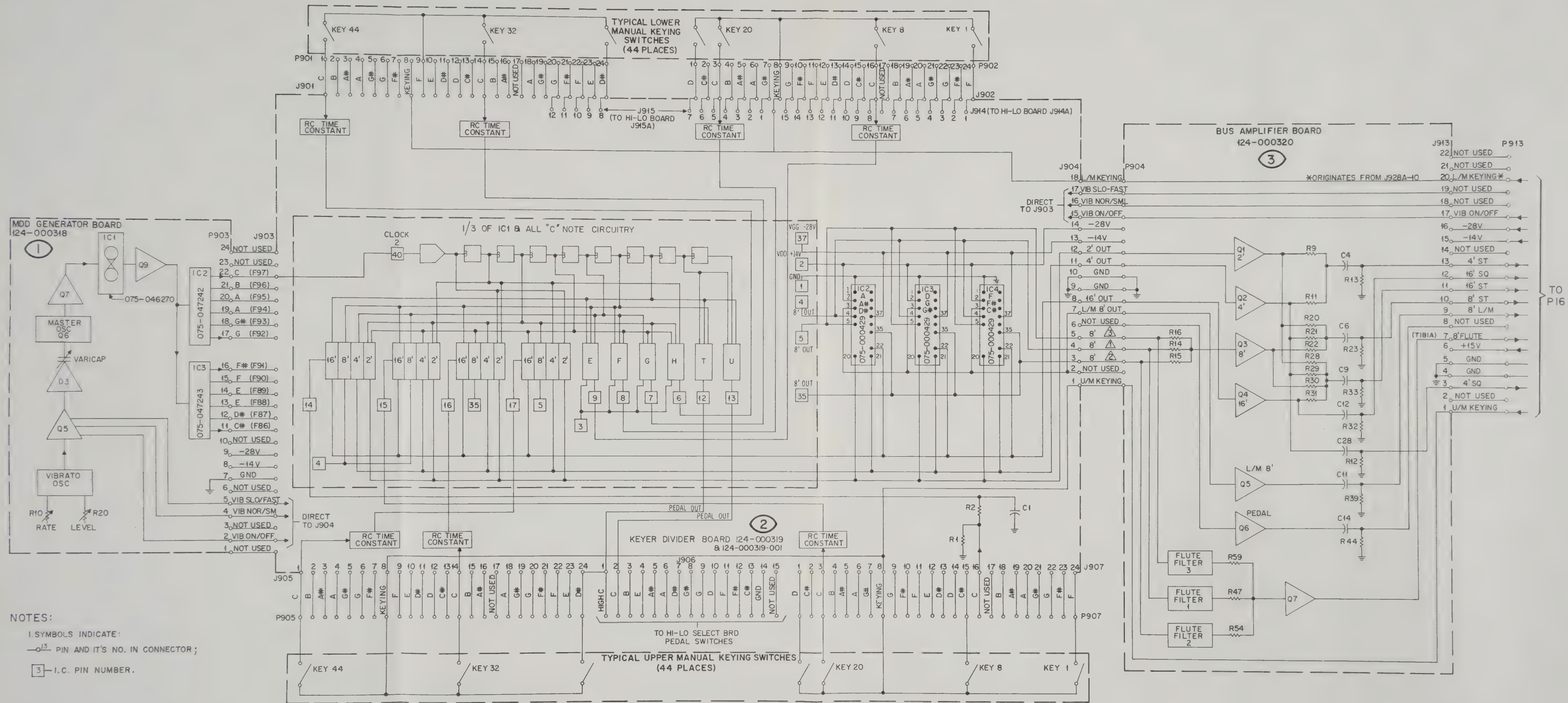


FIGURE A-1
 9200, 9400 AND 9500 SERIES
 CONSOLE LOGIC DIAGRAM
 SERIAL #340399 AND ABOVE
 (SHEET 1 OF 3)

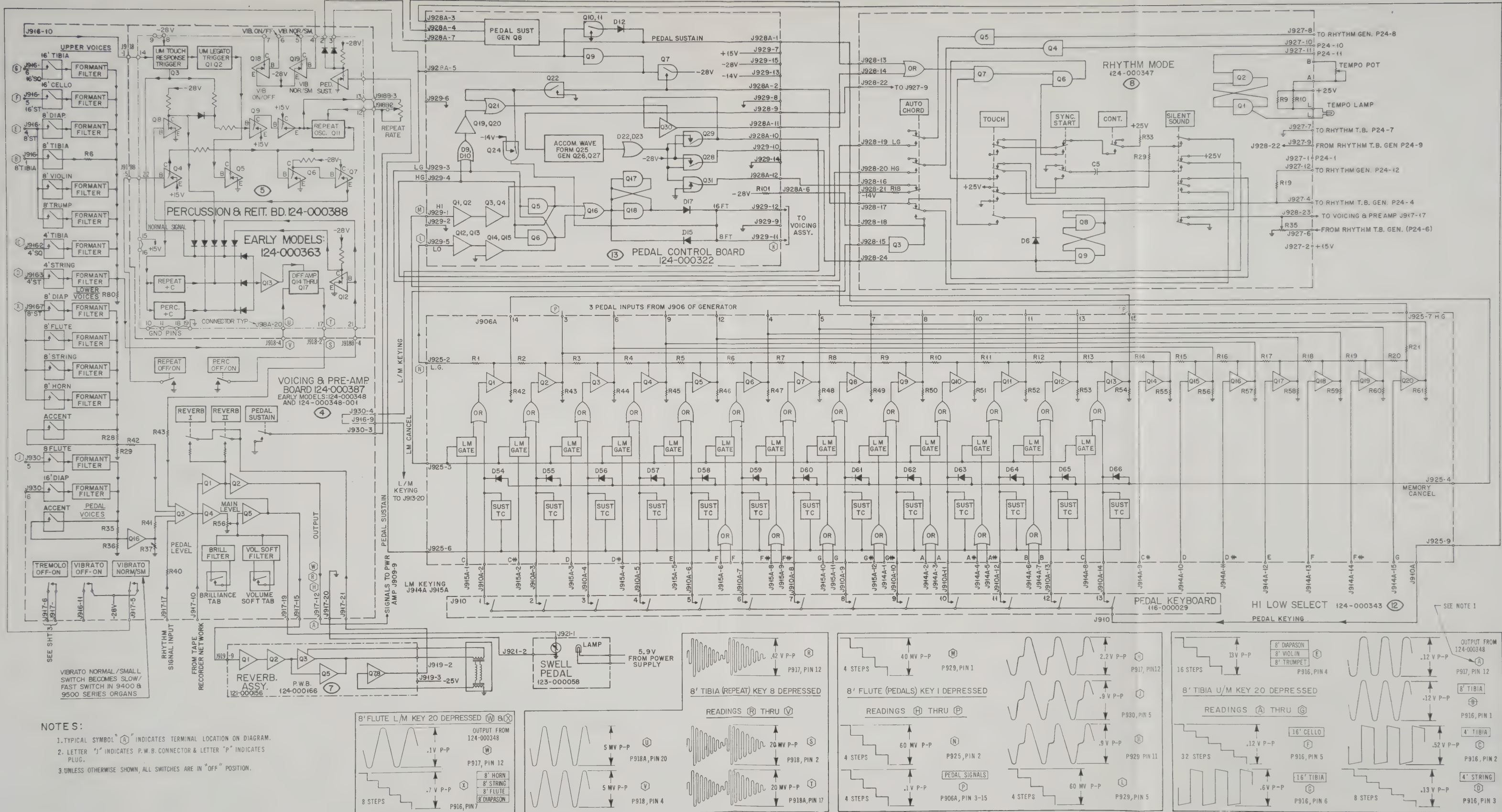
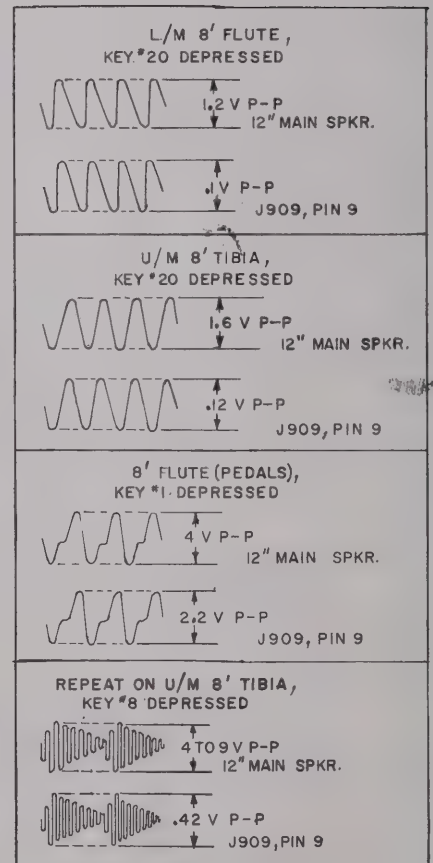
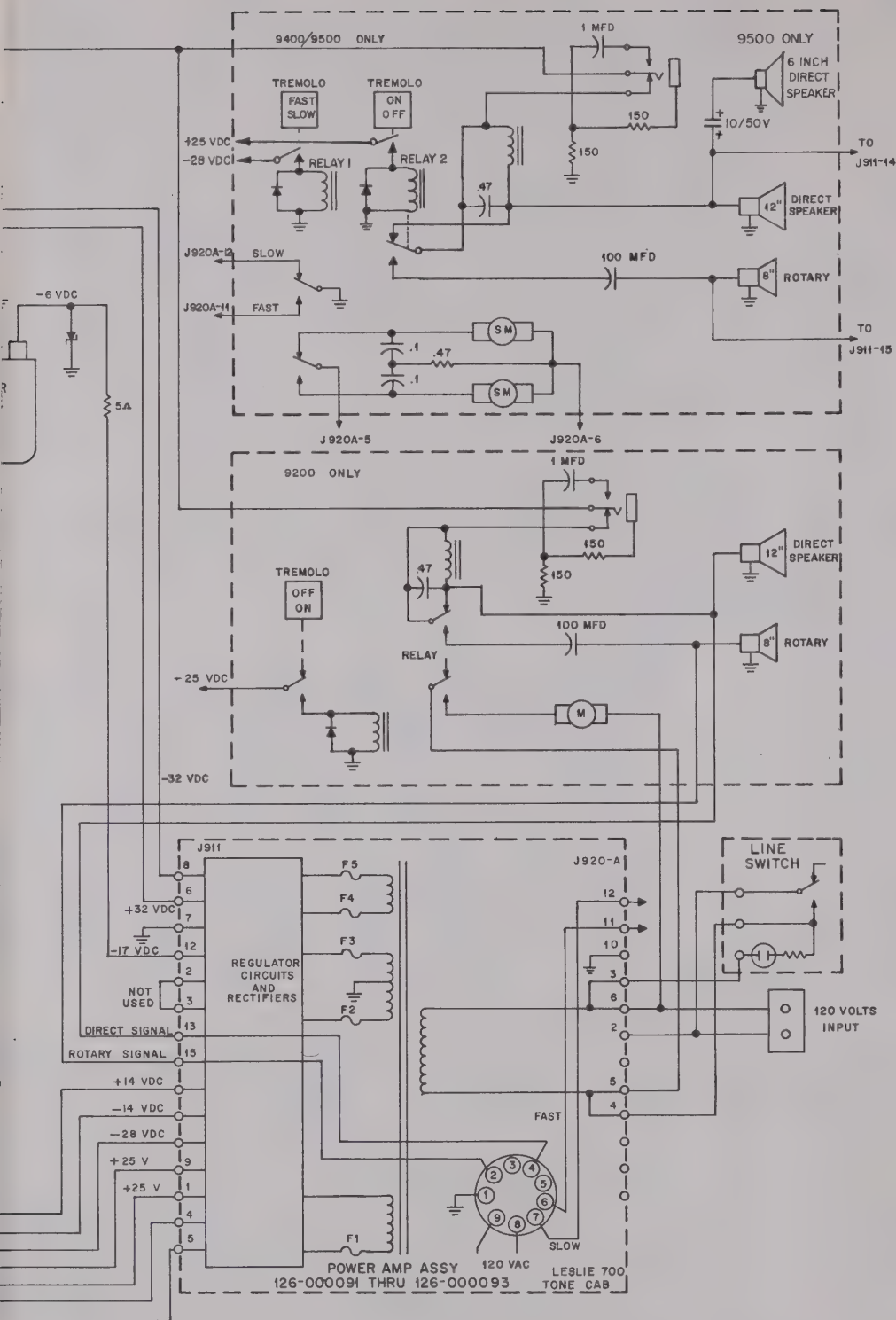
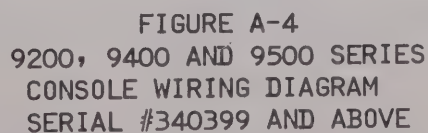
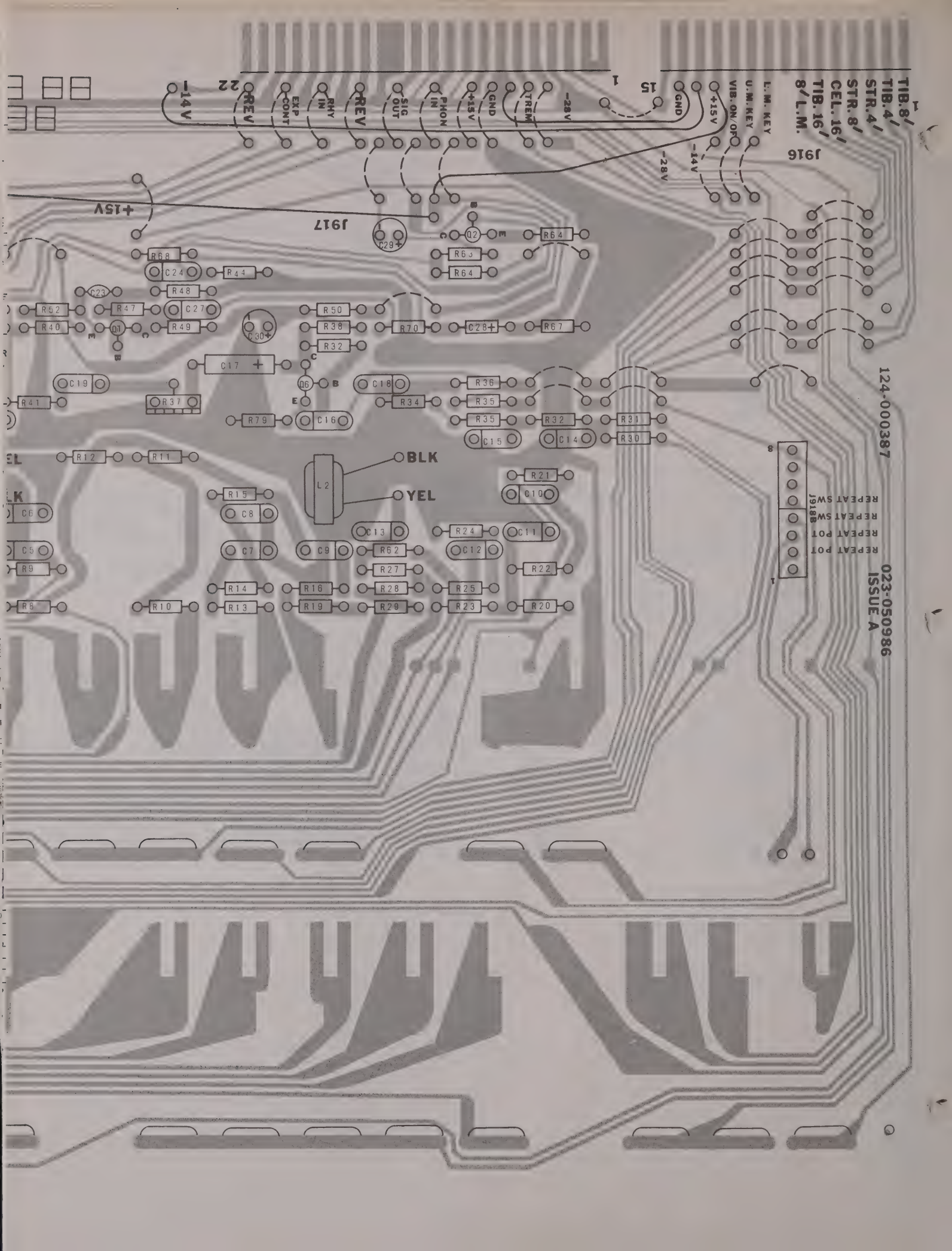


FIGURE A-2
9200, 9400 AND 9500 SERIES
CONSOLE LOGIC DIAGRAM
SERIAL #340399 AND ABOVE
(SHEET 2 OF 3)

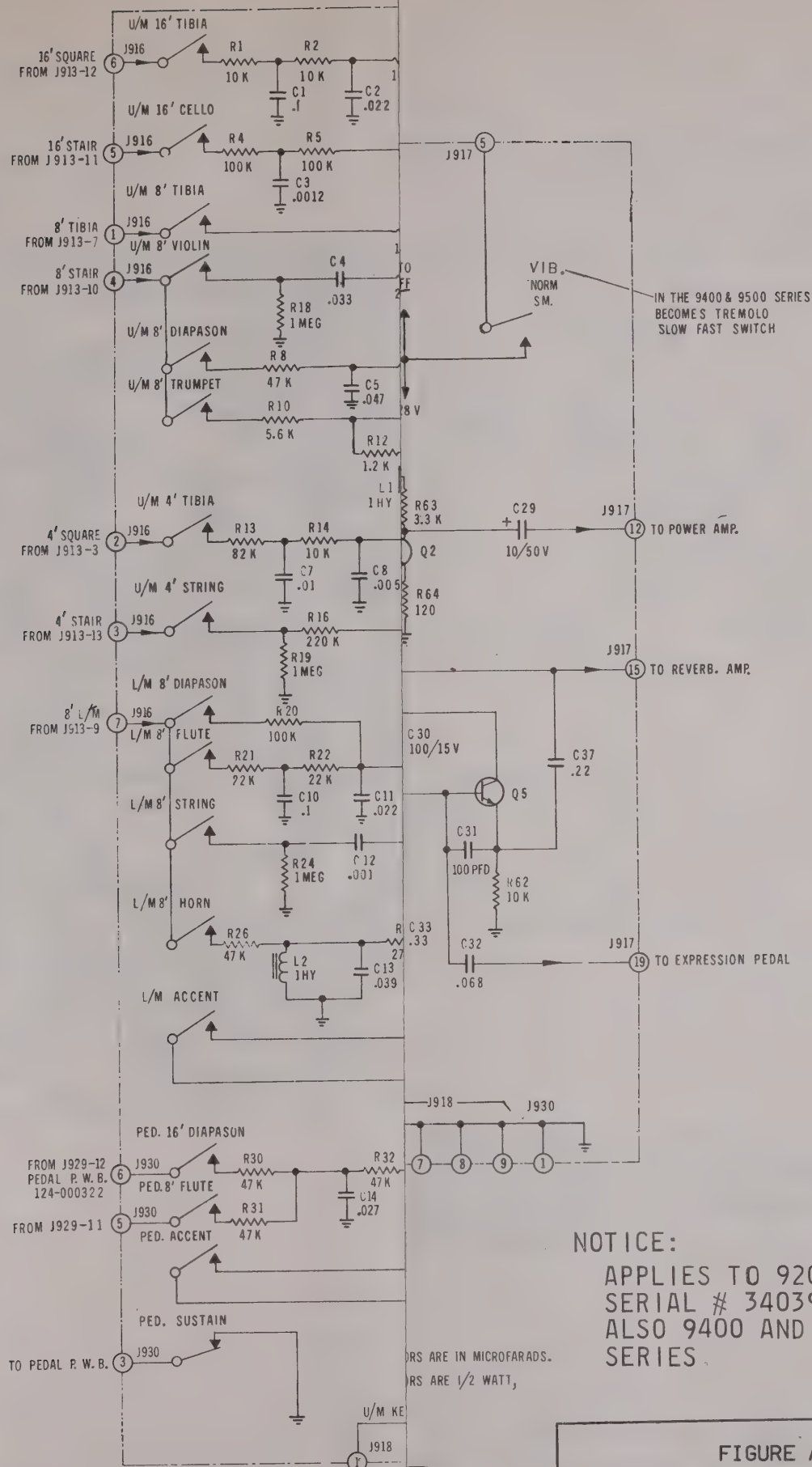






124-000387

023-050986
ISSUE A



NOTE:
FOR 9200 SERIES
SERIAL # 340399
AND ABOVE.

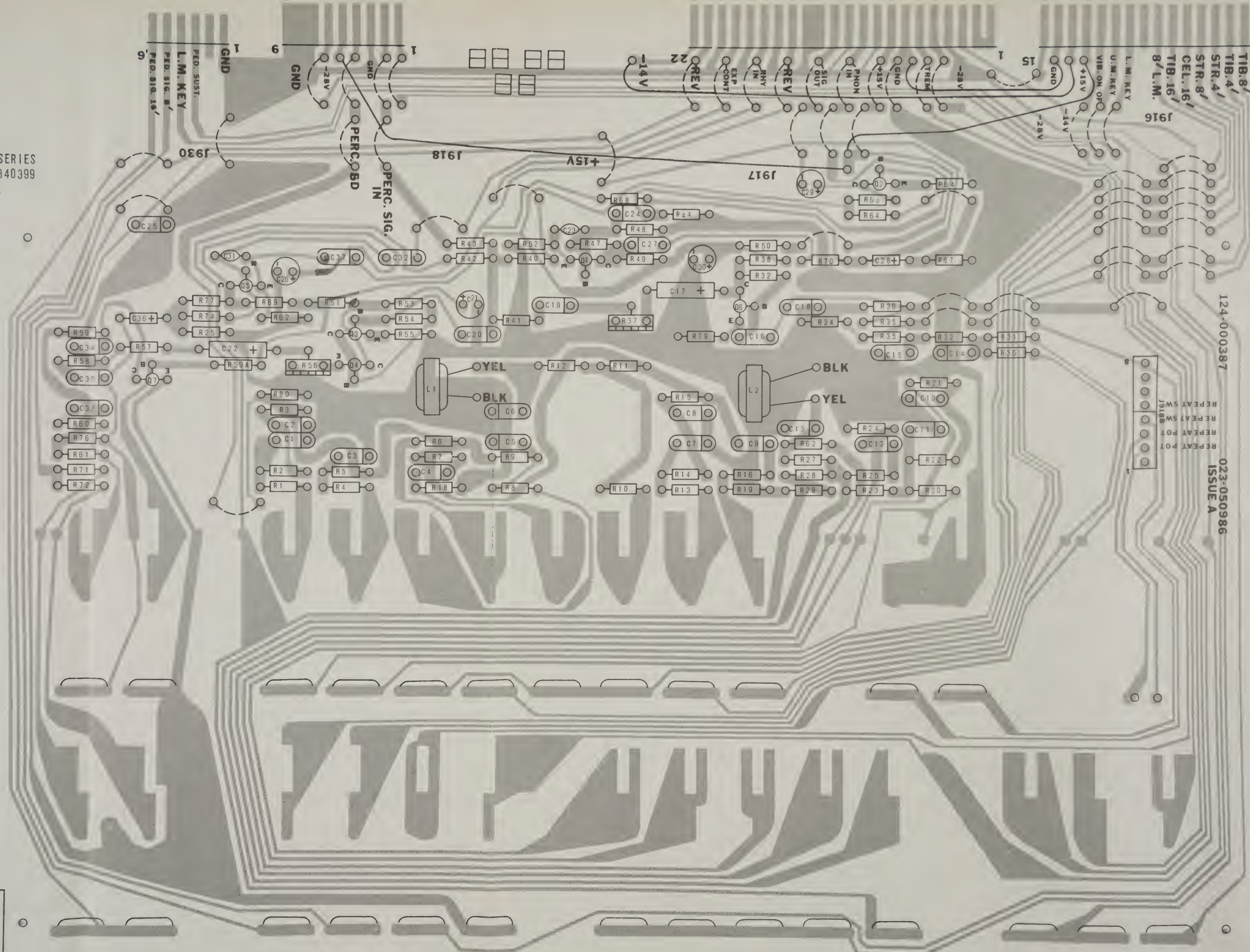
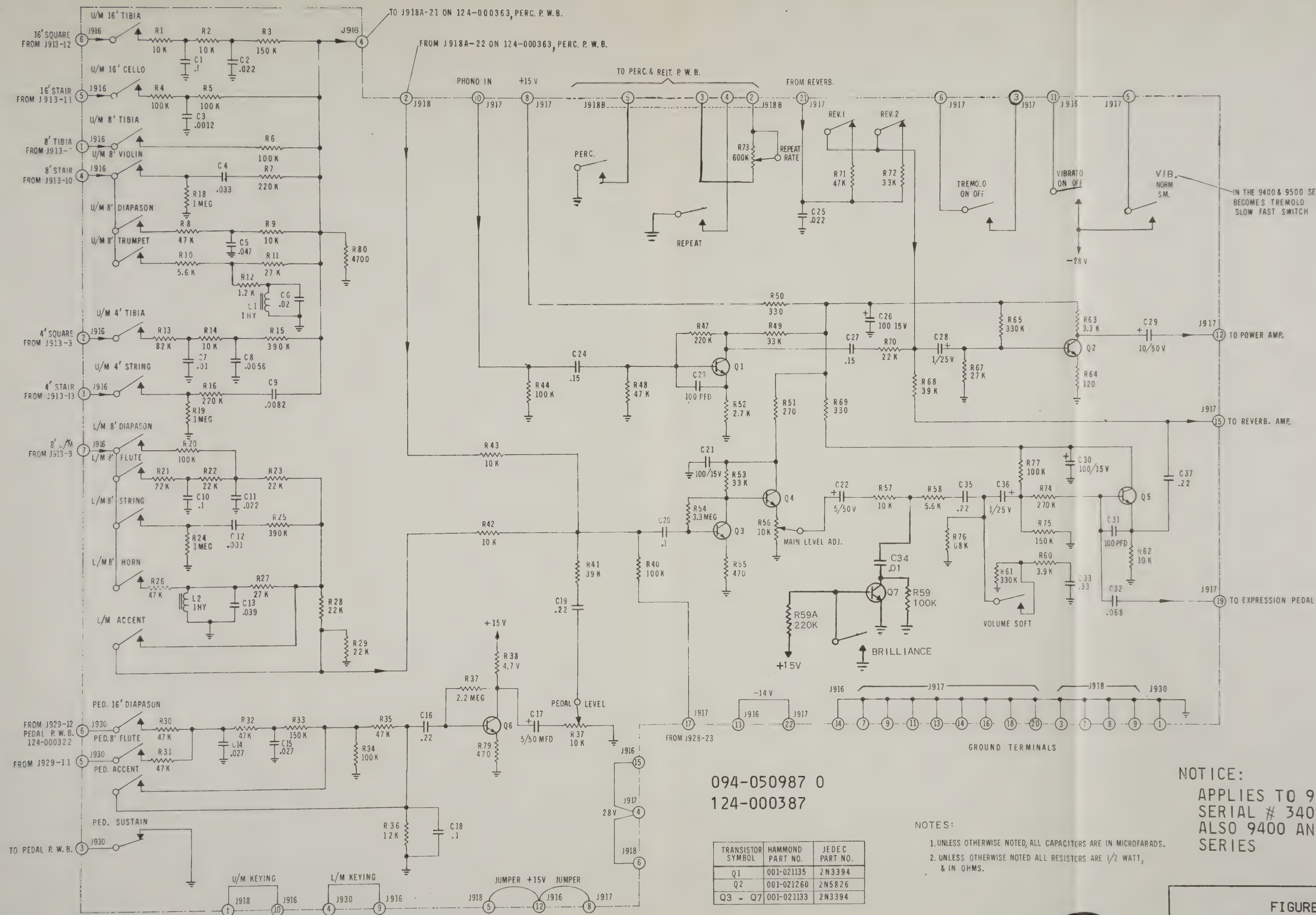


FIGURE A-5
VOICING, PRE-AMP & SWITCHING
BOARD - LEGEND
(124-000387)

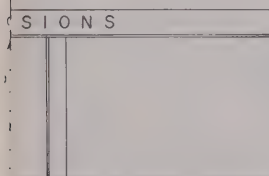
124-000387

023-050986
ISSUE A

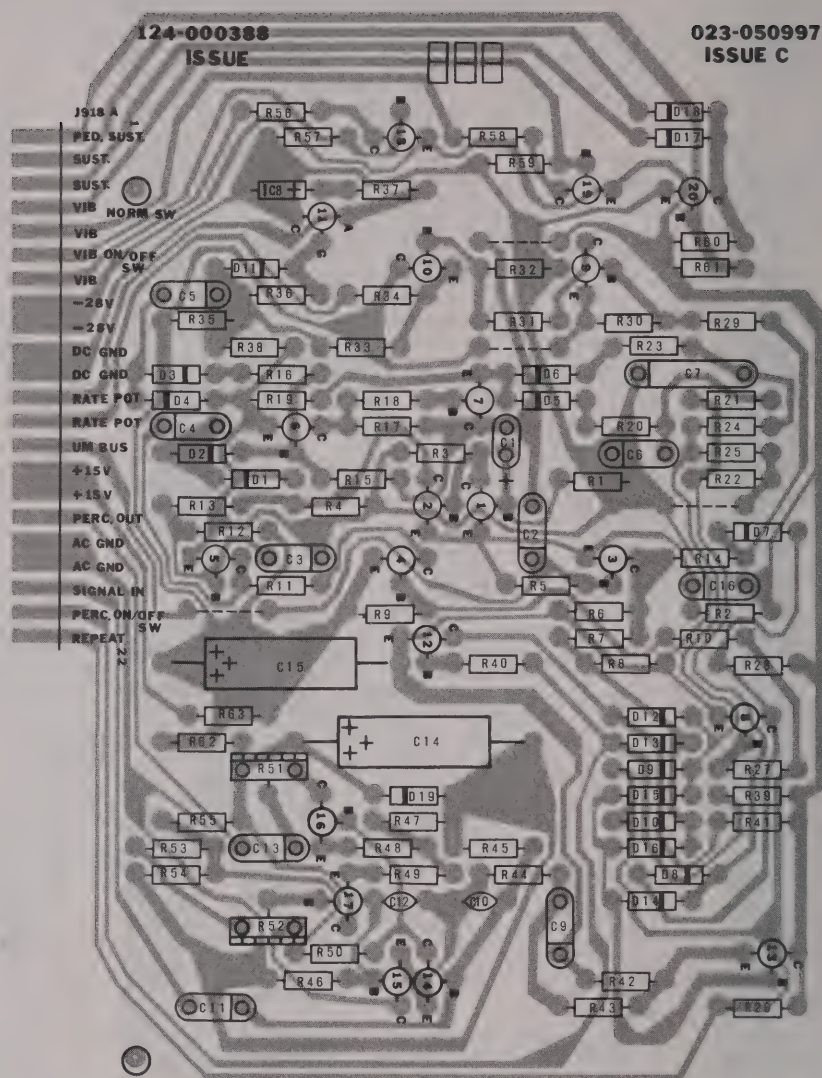


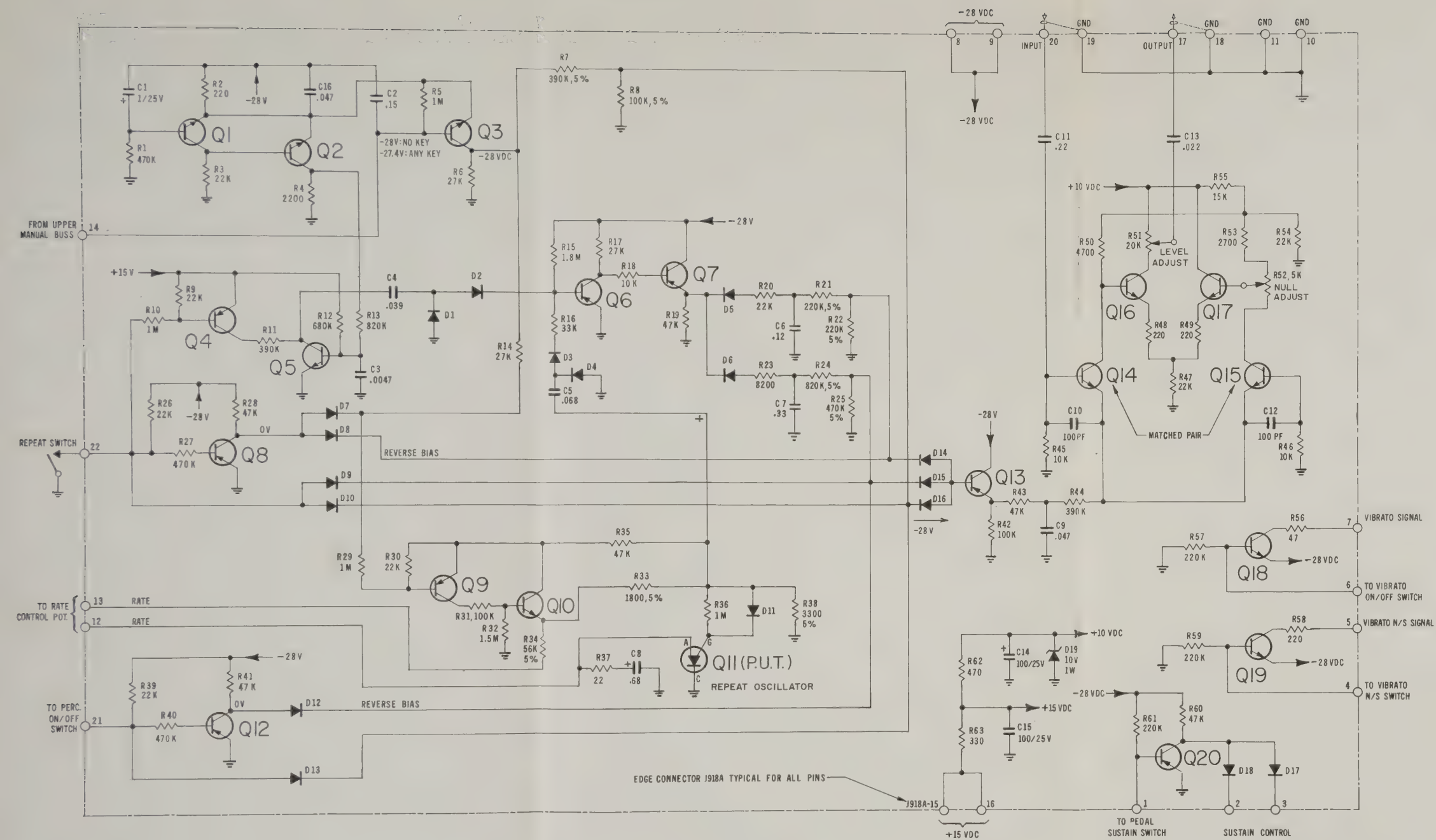
4

FIGURE A-6
VOICING, PRE-AMP & SWITCHING
BOARD - SCHEMATIC
(124-000387)



1. 9200 SERIES, STARTING WITH SERIAL NUMBER 304399 AND UP;
2. 9400 SERIES;
3. 9500 SERIES.





NOTES:

- UNLESS OTHERWISE SPECIFIED--
ALL RESISTOR VALUES ARE IN OHMS, 1/2 WATT, $\pm 10\%$;
ALL CAPACITOR VALUES ARE IN MICROFARADS.
- SYMBOL  INDICATES PIN & IT'S NUMBER
IN EDGE CONNECTOR J918A.

QTY	DESIGNATION	SYMBOL	HAMMOND PART #	JEDEC PART #
5	Q1, Q2, Q3, Q18, Q19		001-021134	2N 3394
7	Q4, Q6, Q7, Q8, Q9, Q13, Q20		001-021172	2N 4249
4	Q5, Q10, Q16, Q17		001-021133	2N 3394
1	Q11 (P.U.T.)		001-026050	2N 6027
2	Q14 & Q15 (MATCHED PAIR)		001-021260-001	2N 5826
18	D1 THRU D18		001-026080	1N 4148
1	D19 (ZENER, 10V, 1W)		001-023035	1N 4740

REPEAT AND
PERCUSSION BOARD
124-000388
094-050998-0

REVISIONS	

USED IN ORGANS:

- 1.9200 SERIES, STARTING
WITH SERIAL NUMBER
304399 AND UP;
- 2.9400 SERIES;
- 3.9500 SERIES.

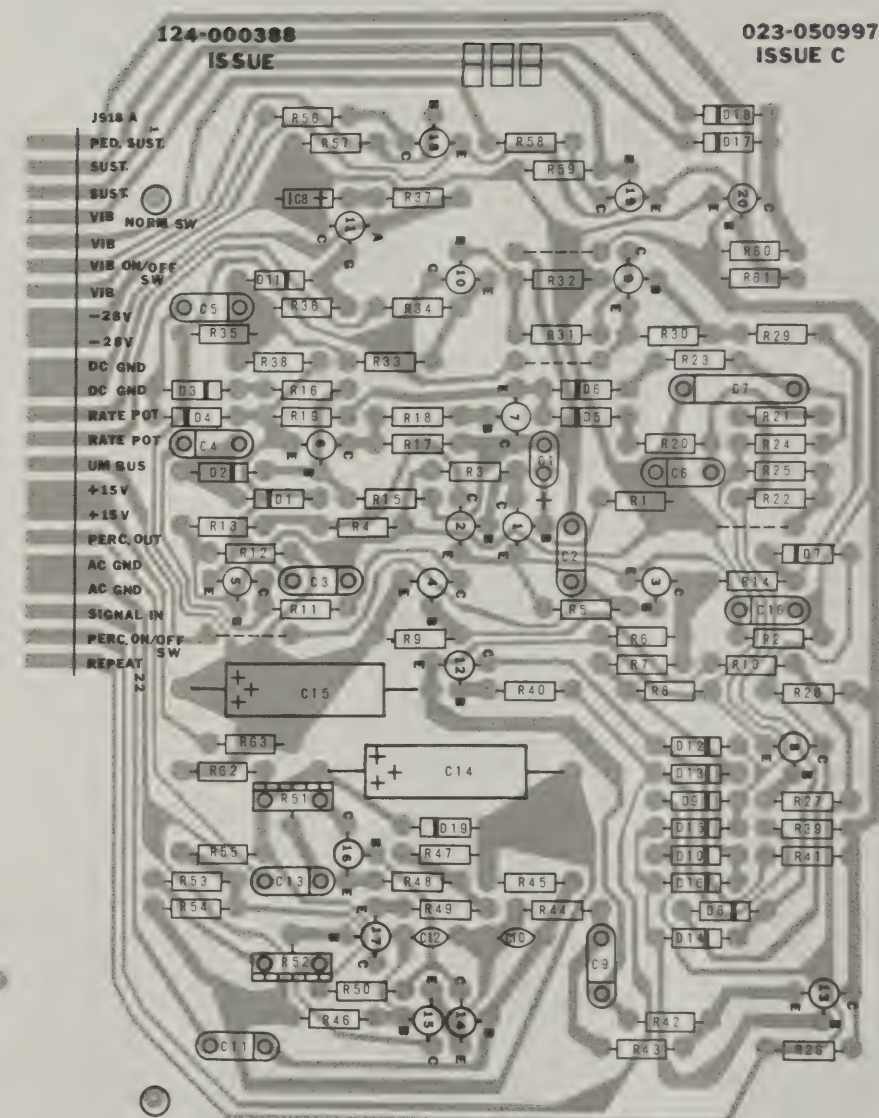


FIGURE A-7
PERCUSSION & REPEAT BOARD
LAYOUT AND SCHEMATIC
(124-000388)

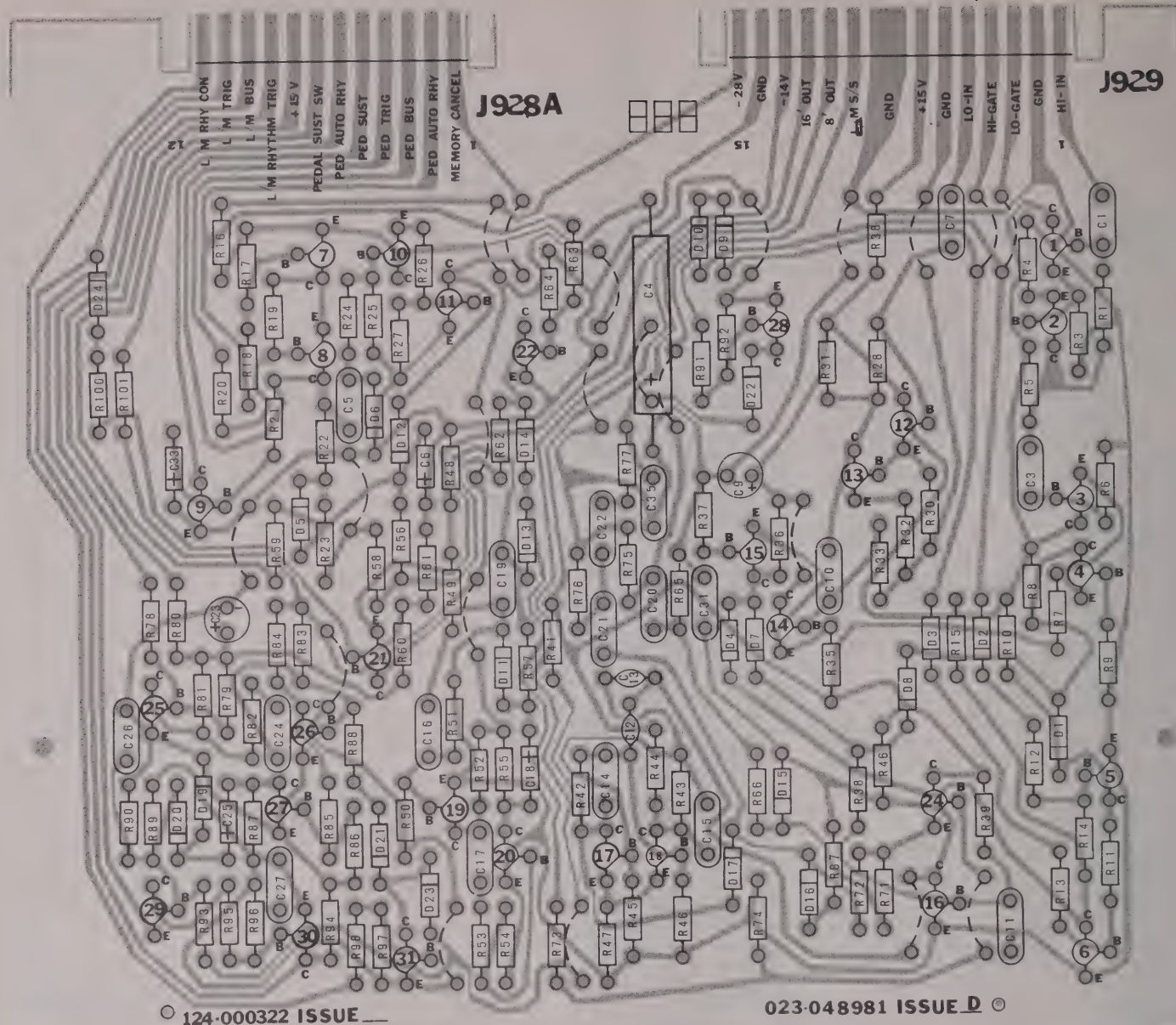
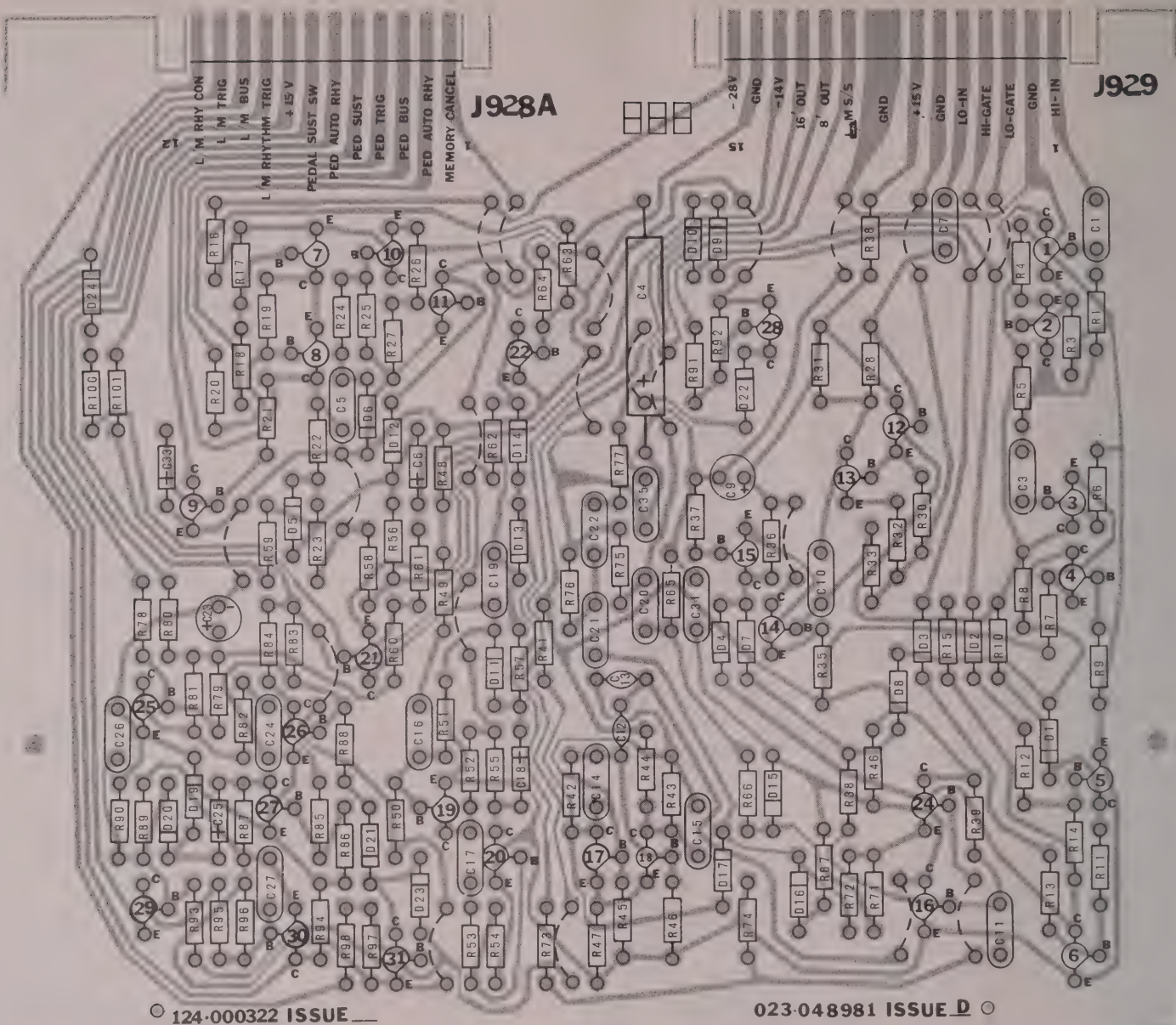


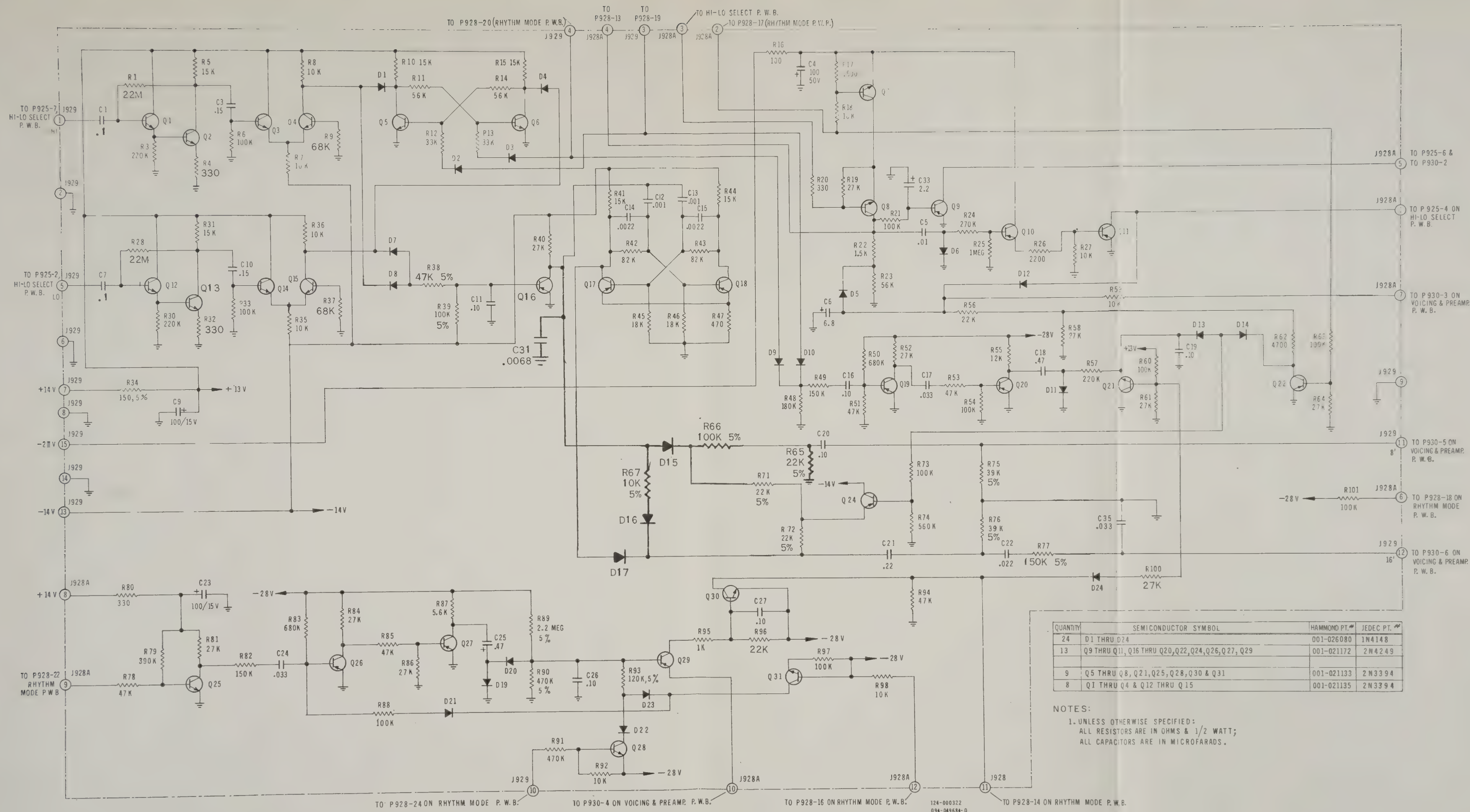
FIGURE A-8
PEDAL CONTROL BOARD
LAYOUT
(124-000322)



© 124-000322 ISSUE

023-048981 ISSUE D ©

FIGURE A-8
PEDAL CONTROL BOARD
LAYOUT
(124-000322)



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FIGURE A-9
PEDAL CONTROL BOARD
SCHEMATIC
(124-000322)

UPDATED PARTS LIST

9100 SERIES

ONLY ADDED AND UPDATED PARTS INDICATED, OTHERS ON ILLUSTRATION STILL IN EFFECT. REVISIONS - FALL BOARD & MANUAL ASSEMBLIES.

SEE PAGE 4-3 (USE TOP ILLUSTRATION
FOR REFERENCE)

CABINET ASSY.
111-009122 (9122)

CASE ASSY.
051-002650 (9122)
TOP & MUSIC PANEL
051-002651 (9122)

UPPER MANUAL ASSY. (SEE A
119-000068
LOWER MANUAL ASSY. (SEE A
119-000069

9200, 9400 AND 9500 SERIES

ONLY ADDED AND UPDATED PARTS INDICATED, OTHERS ON ILLUSTRATION STILL IN EFFECT. CHANGES DUE TO FALL BOARD REMOVAL, PRINTED WIRING BOARDS, CABLES AND OTHER REVISIONS.

SEE PAGE 4-12 (USE TOP ILLUSTRATION
FOR REFERENCE)

MUSIC PANEL (ONLY)
051-002426 (9200)(9422)
TOP & MUSIC PANEL ASSY.
051-002661 (9222)(9422)
051-002662 (9212)(9412)
TOP PANEL ONLY
051-002658 (9200 & 9400)
END BLOCK ASSY. - UPPER L.H.
125-000118 (9200-S/N 340399 & Above)
125-000118-001 (9400)
CABINET ASSY.
111-009222 (9222)(9422)
111-009212 (9212)(9412)
BENCH ASSY.
152-000091 (9200 & 9400)
FRONT PANEL (ATTACHED TO TOP)
061-050963
884-050534 SCREW

SEE PAGE 4-12 (USE BOTTOM ILLUSTRATION
FOR REFERENCE)

TOP & MUSIC PANEL ASSY.
051-002667 (9512)
051-002667-001 (9524)
051-002667-002 (9546)
051-002667-003 (9595)
TOP PANEL ASSY.
051-002700 (9512)
051-002700-001 (9524)
051-002700-002 (9546)
051-002700-003 (9595)
MUSIC PANEL
051-002711 (9524)
025-051010 (9546)
025-051011 (9595)
SCREW
882-030737
HINGE
032-033414
END BLOCK ASSY. - UPPER L.H.
125-000118-001 (9400)(9500)
CABINET ASSY.
111-009512 (9512)
111-009524 (9524)
111-009546 (9546)
111-009595 (9595)
CASE ASSY.
051-002666 (9512)
051-002710 (9524)
051-002735 (9546)
051-002760 (9595)
FRONT RAIL ASSY.
051-002676 (9512-9564)
051-002676-001 (9524-9595)
CLEAT
051-002677 (9512-9546)
051-002677-001 (9524-9595)
FRONT PANEL
061-050963
UPPER MANUAL (SEE A
119-000068
LOWER MANUAL (SEE A
119-000069

SEE PAGE 4-12 (USE BOTTOM ILLUSTRATION
FOR REFERENCE CONTINUED)

ORNAMENT (Front Panel)
050-001970
PANEL & GRILLE CLOTH ASSY.
052-051000 (9512)
052-051000-001 (9524)
052-051000-002 (9546)
052-051000-003 (9595)
GRILLE PANEL (ONLY)
054-051001
GRILLE CLOTH (ONLY)
053-048970-004 (9512)
053-048970-005 (9524)
053-048970-006 (9546)
053-048970-007 (9595)
LEG (NOT SHOWN)
051-002673-001 L.H. (9512)
051-002673-002 R.H. (9512)
051-002736-001 L.H. (9546)
051-002736-002 R.H. (9546)
051-002761-001 L.H. (9595)
051-002761-002 R.H. (9595)
SEE PAGE 4-13 (USE TOP ILLUSTRATION
FOR REFERENCE)
PERC. & REIT BOARD ASSY. (9200
S/N 340399 & ABOVE)(9400)(9500)
124-000388 (ALSO SEE PAGE
VOICING & SWITCHING BOARD (9200
S/N 340399 & ABOVE)(9400)(9500)
124-000387 ALSO SEE PAGE
END BLOCK ASSY. - UPPER L.H.
125-000118 (9200-S/N 340399 & ABOVE)
125-000118-001 (9400) (9500)

SEE PAGE 4-14 (USE TOP ILLUSTRATION
FOR REFERENCE)

END BLOCK ASSY. - UPPER L.H.
125-000118 (9200-S/N 340399 & ABOVE)
VOICING & PREAMP BOARD (ONLY)
124-000387 (See A
END BLOCK & TAB ASSY. (ONLY)
060-049672
END BLOCK ASSY. UPPER L.H.
125-000118-001 (9400 & 9500)
VOICING & PREAMP BOARD (ONLY)
124-000387
END BLOCK & TAB ASSY. (ONLY)
060-049823
ROCKER TABS FOR 125-000118 &
125-000118-001

031-050966-014 - VOLUME SOFT
031-050966-015 - BRILLIANCE
031-050966-001 - TIBIA 16'
031-050966-002 - CELLO 16'
031-050966-004 - DIAPASON 8'
031-050966-005 - TIBIA 8'
031-050966-006 - VIOLIN 8'

SEE PAGE 4-14 (USE TOP ILLUSTRATION
FOR REFERENCE CONTINUED)

031-050966-008 - TRUMPET 8'
031-050966-009 - TIBIA 4'
031-050966-010 - STRING 4'
031-050966-012 - OFF PERC. ON.
031-050966-011 - OFF REPEAT ON
031-050966-016 - REVERB I
031-050966-017 - REVERB II
031-050966-019 - Diapason 16'
031-050966-020 - FLUTE 8'
031-050966-046 - PEDAL ACCENT
031-050966-034 - PEDAL SUSTAIN
031-050966-004 - DIAPASON 8'
031-050966-020 - FLUTE 8'
031-050966-025 - STRING 8'
031-050966-026 - HORN 8'
031-050966-027 - ACCENT
031-050966-028 - OFF/VIBRATO/ON
* 031-050966-029 - SMALL/VIB/NORMAL
(125-000118 ONLY)
* 031-050955-045 - SLOW/ACOUSTIC
TREMOLLO/FAST
(125-000118-001
ONLY)
031-050955-044 - OFF/ACOUSTIC
TREMOLLO/ON

FILLER BLOCK
025-049586
DETENT SPRING
012-051112 (2 used)

SEE PAGE 4-15 (USE BOTTOM ILLUSTRATION
FOR REFERENCE)

PERC. & REIT. BOARD
124-000388 (9200 S/N 340399 & ABOVE
(9400) (9500)

END BLOCK ASSY.
125-000118 (9200 S/N 340399 & ABOVE
125-000118-001 (9400)(9500)

SEE PAGE 4-18 (USE ILLUSTRATION FOR
REFERENCE.)

CABLE ASSY - ORGAN
001-049665 (9200)
SPEAKERS
014-045504 (9500 ONLY)
014-045827 (9500 ONLY)
PERC. & REIT BOARD
124-000388 (9200 S/N 340399 & ABOVE)
(9400) (9500)
CABLE ASSY. (9200)(9400)(9500)
BUS AMP
011-051008 (9200 S/N 340399 & ABOVE)
(9400) (9500)
011-049664 (9200 EARLY UNITS)
ORGAN
011-049665 (9200 SERIES)
011-049687 (9400)(9500)
PERC. & REIT
011-051007 (9200 S/N 340399 & ABOVE)
(9400)(9500)
011-049689 (9200 EARLY UNITS)

UPDATED PARTS LIST CONTINUED

9200, 9400, 9500 SERIES CONTINUED

UPPER & LOWER MANUAL ASSEMBLIES (SEE PAGE 4-11 AND 4-12 FOR REFERENCE)

UPPER MANUAL ASSY.
119-000068
LOWER MANUAL ASSY.
119-000069
COMMON PARTS
MANUAL PWB ASSY. #1
023-045694
MANUAL PWB ASSY. #2
023-045695-003
KEYS & SPRING ASSEMBLIES
057-045707-005 ("F" TO "CX")
057-045708-005 ("F" TO "B")
057-045709-005 ("C" TO "E")
DOWN STOP FELT
042-045676
POLY, FILM TAPE
039-051025
SWITCH ACTUATOR
025-047278

CABLE ASSEMBLIES (9200)(9400)(9500)

Power Switch 011-049671
Hi-Lo Select 011-049670
Pedal Keying 011-049615
Pedal Signal 011-049616
Pedal Signal 011-049691
Upper Manual 011-048988
Keying Autochord 011-049614
Rhythm 011-049613
Rhythm Mode #1 011-049658
Rhythm Mode #2 011-049667
Tremolo 011-049690
Cord Set 011-046856

Bus Amp 011-051008
(9200 S/N 340399 AND ABOVE)
(9400) (9500)
011-049664
(9200 EARLY UNITS)

Organ 011-049665
(9200 Series)
011-049687
(9400) (9500)

PERC & REIT 011-051007
(9200 S/N 340399 AND ABOVE)
(9400) (9500)
011-049689
(9200 EARLY UNITS)

124-000387 SWITCH & VOICING BOARD

PWB (NO PARTS) 023-050986
Transistors
Q1 001-021135
Q2 001-021260
Q3 - Q6 001-021133

Resistors (OHMS)
120 600-220271
270 600-220351
330 600-220371
470 600-220411
1.2K 600-220511
2.7K 600-220591
3.3K 600-220611
3.9K 600-220631
4.7K 600-220651
5.6K 600-220671
8.2 600-220711
10K 600-220731
12K 600-220751
22K 600-220811
27K 600-220831
33K 600-220851
39K 600-220871
47K 600-220891
68K 600-220931

124-000387 CONTINUED

100K 600-220971
150K 600-221011
220K 600-221051
270K 600-221071
330K 600-221091
390K 600-221111
1M 600-221211
2.2M 600-221291
3.3M 600-221331
10K Trimmer Pot 676-000064
Capacitors
Mylar
.001 MFD 412-110542
.0012 MFD 412-110582
.0056 MFD 412-110692
.0082 MFD 412-110602
.01 MFD 412-110462
.022 MFD 412-110482
.027 MFD 412-110492
.033 MFD 412-110502
.039 MFD 412-110652
.047 MFD 412-110512
.068 MFD 412-110632
.10 MFD 412-110522
.15 MFD 412-110642
.22 MFD 412-110532
.33 MFD 412-110572
Ceramic
100 MMFD 426-010252
Electrolytic
1 MFD 25V 414-240092
5 MFD 50V 431-056509
10 MFD 50V 432-106509
100 MFD 15V 432-107159
Filter Choke
L1, L2 003-037670
SW Wiper Contact
W1-W26 030-049591
Contact
CT1 - CT 26 030-049592

124-000388 REPEAT & PERC. BOARD

PWB (NO PARTS) 023-050977
Transistor
Q1-Q3, Q18, Q19 001-021134
Q5, Q10, Q16, Q17 001-021133
Q4, Q6-Q9, Q12, Q13, Q20 001-021172
Q11 001-026050
Q14, A15 001-021260-001
Diodes
Signal
D1-D18 001-226080
Zener 10V 1W
D19 001-023035
Resistors (OHMS)
22 600-220091
47 600-220171
220 600-220331
330 600-220371
470 600-220411
1.8K 5% 600-220552
2.2K 600-220571
2.7K 600-220591
3.3K 5% 600-220612
4.7K 600-220651
8.2K 600-220711
10K 600-220731
15K 600-220771
22K 600-220811
27K 600-220831
33K 600-220851
47K 600-220891
56K 5% 600-220912
100K 600-220971
100K 5% 600-220972
220K 600-221051
390K 5% 600-221112
470K 600-221131
470K 5% 600-221132
680K 600-221171

124-000388 CONTINUED

820K 600-221191
820K 5% 600-221192
1.0 M 600-221211
1.5 M 600-221251
1.8 M 600-221271
5K Trimmer Pot
30% 1/8 W 676-000061
20K Trimmer Pot
30% 1/8 W 676-000065
Capacitor
Mylar
.0047 MFD 412-110722
.0022 MFD 412-110482
.039 MFD 412-110652
.047 MFD 412-110512
.068 MFD 412-110632
.12 MFD 412-110712
.15 MFD 412-110642
.22 MFD 412-110532
.33 MFD 412-110552
Ceramic
100 MMFD 426-010252
Tantalum
.68 MFD 15V 414-230072
1.0 MFD 35V 30% 435-105354
Electrolytic
100 MFD 25V 431-107259

